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Simplify

SANsurfer iSCSI HBA CLI Application User's Guide

Command Line Interface for SANblade iSCSI Host Bus Adapters

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-netconf command: removed dash (–) in front of IPNM.	5.33
-bootcodemode command: added <*HBA No.*> parameter.	5.38
-bootcode command: added <*HBA No.*> parameter.	5.39
-sbootcodecid command: added <*HBA No.*> parameter.	5.40
Added index.	Index

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Table of Contents

Section 1 Introduction

1.1 Technical Support 1-1

Section 2 Getting Started

2.1 Introduction 2-1
2.2 Interactive Mode 2-1
2.3 Non-interactive Mode 2-3

Section 3 Initial Installation

3.1 Installation Instructions 3-1
3.1.1 Windows 3-2
3.1.2 Red Hat/SuSE Linux/PPC 3-6
3.1.3 Solaris SPARC/Solaris x86 3-6
3.2 Uninstall Instructions 3-6
3.2.1 Windows 3-7
3.2.2 Red Hat/SuSE Linux/PPC 3-7
3.2.3 Solaris SPARC/Solaris x86 3-7

Section 4 Interactive Mode Commands

4.1 Display General System Information (Command Line Option -g) 4-1
4.2 Display Program Version Information (Command Line Option -ver) 4-1
4.3 List All QLogic iSCSI HBAs Detected (Command Line Option -i) 4-1
4.4 HBA Options Menu 4-2
4.4.1 HBA Network Settings Menu 4-3
4.4.1.1 Display Network Settings (Command Line Options -netconf and -slp) 4-3
4.4.1.2 Configure IP Settings (Command Line Option -ipdhcp) 4-4
4.4.1.2.1 Using DHCP 4-4
4.4.1.2.2 Using SLP 4-5
4.4.1.3 iSNS Settings (Command Line Option -isns) 4-5
4.4.2 HBA Firmware Settings Menu 4-5
4.4.2.1 Display Configured HBA Settings (Command Line Option -c) 4-6
4.4.2.2 Change HBA Alias Name 4-14
4.4.2.3 Edit Configured HBA Settings Menu 4-14
4.4.2.3.1 Edit a Specific HBA Setting 4-15
4.4.2.3.2 Configure iSCSI Settings (Command Line Option -n) 4-15

4.4.2.3.3 Configure Firmware Settings 4-16
4.4.2.3.4 Configure Device Settings 4-16
4.4.2.3.5 Configure Basic Settings. 4-17
4.4.2.3.6 Configure Advanced Settings 4-18
4.4.2.4 Restore Default HBA Settings (Command Line Option -rdf) 4-18
4.4.2.5 Update Firmware Image (Command Line Option -f) 4-19
4.4.2.6 Update ROM Image (Command Line Option -r) 4-19
4.4.2.7 Get Crash Record (Command Line Option -gcr) 4-19
4.4.3 HBA Bootcode Settings Menu 4-19
4.4.3.1 Display Bootcode Information (Command Line Option -binfo) 4-20
4.4.3.2 Set Bootcode Mode (Command Line Option -bootcodemode) 4-20
4.4.3.3 Set Primary Boot Target Information (Command Line Option -pbootcode) 4-21
4.4.3.4 Set Secondary Boot Target Information (Command Line Option -sbootcode) 4-21
4.4.3.5 Clear Primary Target Information (Command Line Option -cpbootcode) 4-21
4.4.3.6 Clear Secondary Primary Target Information (Command Line Option -csbootcode) 4-21
4.4.3.7 Set Alternative Client ID (Command Line Option -sbootcodecid) . . 4-21
4.4.3.8 Update Bootcode Code Image (Command Line Option -bootcode) 4-21
4.4.4 HBA Restore Factory Defaults (Command Line Option -rdh) 4-22
4.5 HBA Information (Command Line Option -pinfo) 4-22
4.6 Reset HBA (Command Line Option -b) 4-23
4.7 Target Menu 4-24
4.7.1 List Targets (Command Line Option -t) 4-24
4.7.2 Bind Target (Command Line Option -pb) 4-25
4.7.3 Unbind Target (Command Line Options -pu and -px) 4-25
4.7.4 Configure Target Parameters 4-25
4.7.5 Add a Target (Command Line Option -pa) 4-26
4.7.6 Configure Target Authentication Menu 4-26
4.7.6.1 Display a CHAP Table (Command Line Option -dspchap) 4-27
4.7.6.2 Display Targets Using CHAP Entries (Command Line Option -chapmap) 4-27
4.7.6.3 Assign a CHAP Entry to a Target (Command Line Option -linkchap) 4-27
4.7.6.4 Add a CHAP Entry (Command Line Option -addchap) 4-28
4.7.6.5 Add a Default BIDI CHAP (Command Line Option -defbidi) 4-28
4.7.6.6 Edit a CHAP Entry (Command Line Option -edchap) 4-29
4.7.6.7 Delete a CHAP Entry (Command Line Option -delchap) 4-29
4.7.7 List LUN Information (Command Line Option -l) 4-30

4.8 Diagnostic Menu . . . 4-30
4.8.1 Ping Target (Command Line Option -ping) . . . 4-31
4.8.2 Perform Loopback Test (Command Line Option -lb) . . . 4-31
4.8.3 Perform Read/Write Buffer Test (Command Line Option -rwt) . . . 4-32
4.8.4 Display HBA Statistics (Command Line Option -stat) . . . 4-32
4.9 Display Vital Product Data (VPD) Information (Command Line Option -vpd) . . . 4-34
4.10 Set Working Adapter . . . 4-34

Section 5 Non-interactive Mode Commands

5.1 Introduction . . . 5-1
5.2 -b (Reset HBA) . . . 5-2
5.3 -c (Display Configured HBA Settings) . . . 5-2
5.4 -f (Update Firmware Image) . . . 5-2
5.5 -g (Display General System Information) . . . 5-3
5.6 -h (Display Help File) . . . 5-3
5.7 -i (List All QLogic iSCSI HBAs Detected) . . . 5-3
5.8 -l (List LUN Information) . . . 5-3
5.9 -n (Configure iSCSI Settings) . . . 5-4
5.10 -pa (Add a Target) . . . 5-5
5.11 -ps (Display Persistent (Bound Targets)) . . . 5-5
5.12 -pb (Bind Target) . . . 5-5
5.13 -pu (Unbind Target) . . . 5-6
5.14 -px (Unbind all Targets) . . . 5-6
5.15 -r (Update ROM Image) . . . 5-6
5.16 -t (List Targets) . . . 5-6
5.17 -ping (Ping IP Address) . . . 5-6
5.18 -lb (Perform Loopback Test) . . . 5-7
5.19 -rwt (Perform Read/Write Buffer Test) . . . 5-7
5.20 -dspchap (Display a CHAP Table) . . . 5-8
5.21 -chapmap (Display Targets Using CHAP Entries) . . . 5-8
5.22 -linkchap (Assign a CHAP Entry to a Target) . . . 5-9
5.23 -addchap (Add a CHAP Entry) . . . 5-9
5.24 -defbidi (Add a Default BIDI CHAP) . . . 5-9
5.25 -edchap (Edit a CHAP Entry) . . . 5-9
5.26 -delchap (Delete a CHAP Entry) . . . 5-10
5.27 -pinfo (HBA Port Information) . . . 5-10
5.28 -isns (iSNS Settings) . . . 5-10
5.29 -gcr (Get Crash Record) . . . 5-10
5.30 -rdf (Restore Default Firmware Settings) . . . 5-10

5.31 -rdh (Restore HBA Settings) . . . 5-11
5.32 -stat (Display HBA Statistics) . . . 5-12
5.33 -netconf (Display Network Settings) . . . 5-12
5.34 -ipdhcp (Configure IP Settings) . . . 5-12
5.35 -dnsdhcp (Configure IP Settings) . . . 5-13
5.36 -slp (Display Network Settings) . . . 5-13
5.37 -binfo (Display Bootcode Information) . . . 5-13
5.38 -bootcodemode (Set Bootcode Mode (QLA4050/4052 and QMC4052 HBAs)) . . . 5-13
5.39 -bootcode (Update Bootcode Code Image) . . . 5-14
5.40 -sbootcodecid (Set Alternative Client ID) . . . 5-14
5.41 -pbootcode (Set Primary Boot Target Information) . . . 5-14
5.42 -sbootcode (Set Secondary Boot Target Information) . . . 5-14
5.43 -cpbootcode (Clear Primary Target Information) . . . 5-14
5.44 -csbootcode (Clear Secondary Primary Target Information) . . . 5-15
5.45 -ver (Display Program Version Information) . . . 5-15
5.46 -vpd (Display VPD Information) . . . 5-15

Figures

Figure **Page**

2-1 SANsurfer iSCSI HBA CLI Main Menu (Windows 2000/Windows Server 2003) —Interactive Mode . . . 2-2
3-1 Welcome Dialog Box . . . 3-2
3-2 Destination Folder Dialog Box . . . 3-3
3-3 Start Menu Entries Dialog Box . . . 3-4
3-4 Start Copying Files Dialog Box . . . 3-5
3-5 Setup Complete Dialog Box . . . 3-5

Tables

Table **Page**

2-1 Non-Interactive Mode Options . . . 2-3
4-1 HBA Firmware Settings . . . 4-6
5-1 Command Variables . . . 5-1
5-2 HBA Parameters . . . 5-4
5-3 CHAP Parameters . . . 5-9

Section 1

Introduction

The SANsurfer® command line interface (CLI) application is a simplified, condensed version of the SANsurfer iSCSI HBA Manager GUI. SANsurfer iSCSI HBA CLI does not provide any features that require a GUI.

SANsurfer iSCSI HBA CLI is supported for QLA®4010, QLA4050/4052, and QMC4052 HBAs on the following operating systems:

- Windows® 2000 Server, Advanced Server, Professional
- Windows 2003 Server™
- Red Hat® Linux® AS v2.1 and 3.0 (2.4.*x* kernel): IA32, AMD64/EM64T
- Red Hat Enterprise Linux 4.0 AS (2.6.*x* kernel): IA32, PPC64, AMD64/EM64T
- SuSE® Linux Enterprise Server (SLES) 8: IA32, AMD64
- SuSE SLES 9: IA32, AMD64/EM64T, PowerPC (PPC)
- Solaris® 8 and 9: SPARC
- Solaris 10: SPARC, IA32, AMD64/EM64T

NOTE: Throughout this guide, *HBA* and *adapter* are used interchangeably. *Target* and *device* are also used interchangeably.

1.1 Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic HBA products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider.

Visit the QLogic support Web site at: support.qlogic.com for the latest firmware and software updates.

Notes

Section 2

Getting Started

2.1 Introduction

SANsurfer iSCSI HBA CLI operates in one of the following modes:

- **Interactive mode.** SANsurfer iSCSI HBA CLI starts, then waits for and executes input commands until terminated by the user. Use this mode to perform multiple operations.
- **Non-interactive (command line) mode.** SANsurfer iSCSI HBA CLI starts, performs the functions defined by the list of parameters provided, then terminates. In this mode, the application is executed from a script file or when you want to perform a single operation.

In both modes, SANsurfer iSCSI HBA CLI *is* case sensitive. In addition, file names in some operating systems are case sensitive; in this case, SANsurfer iSCSI HBA CLI *is* case sensitive for that particular file.

2.2 Interactive Mode

Type the following in a command window to start SANsurfer iSCSI HBA CLI in interactive mode:

```
iscli
```

The Main Menu (see figure 2-1) displays. For example:

```
iscli Main Menu
main Interactive Menu

-----------------------------------------------------
Current QLA4010 HBA/Port Information:
HBA Serial Number: FS2046A08466 HBA Port: 0
IP Address: 192.168.8.18 Link: Up
Port Name: iqn.200-04.com.qlogic:qla4010.fs20446a08466
Port Alias:
-----------------------------------------------------

 1. Display General System Information
 2. Display Program Version Information
 3. List All QLogic iSCSI HBAs detected
 4. HBA Options Menu
 5. HBA Information
 6. Reset HBA
 7. Target Menu
 8. Diagnostic Menu
 9. Display VPD Information
10. Set Working Adapter
11. Exit
```

Figure 2-1. SANsurfer iSCSI HBA CLI Main Menu (Windows 2000/Windows Server 2003)—Interactive Mode

Depending on the menu selection, SANsurfer iSCSI HBA CLI prompts for more input as needed. For example, if you select **Set Working Adapter**, SANsurfer iSCSI lists the current HBAs and prompts you to select an HBA whose settings you want to view or change.

2.3 Non-interactive Mode

Type the following in a command window to start SANsurfer iSCSI HBA CLI in non-interactive mode:

```
iscli <Parameters>
```

SANsurfer iSCSI HBA CLI executes the command options, then terminates.

To list all of the available command line parameters, type the following:

```
iscli -h
```

All command line options must be preceded by the dash (-) notation. Most options have a corresponding menu selection in interactive mode. The valid command line options are listed in table 2-1.

Table 2-1. Non-Interactive Mode Options

Non-interactive Option	Interactive Menu Selection	Description	Section
-g	1	Display general system information	4.1, 5.5
-ver	2	Display program version information	4.2, 5.45
-i	3	List all QLogic iSCSI HBAs detected	4.3, 5.7
	4	HBA options:	4.4
-netconf, -slp, -ipdhcp, -isns		network settings	4.4.1, 5.33, 5.36, 5.34, 5.28
-c, -f, -rdf, -r, -gcr, -n, -dnsdhcp,		firmware settings	4.4.2, 5.3, 5.4, 5.30, 5.15, 5.29, 5.9, 5.35
-binfo, -pbootcode, -sbootcode, -cpbootcode, -csbootcode, -bootcodemode -sbootcodecid -bootcode		bootcode settings	4.4.3, 5.37, 5.41, 5.42, 5.43, 5.44, 5.38, 5.40, 5.39
-rdh		restore factory defaults	4.4.4, 5.31
-pinfo	5	HBA information	4.5, 5.27
-b	6	Reset HBA	4.6, 5.2

Table 2-1. Non-Interactive Mode Options (Continued)

Non-interactive Option	Interactive Menu Selection	Description	Section
	7	Target Menu:	4.7
-t		list targets	4.7.1, 5.16
-pb		bind target	4.7.2, 5.12
-pu, -px		unbind target	4.7.3, 5.13, 5.14
N/A		configure target parameters	4.7.4
-pa		add a target	4.7.5, 5.10
-dspcap, -chapmap, -linkchap, -addchap, -defbidi, -edchap, -delchap,		configure target authentication menu	4.7.6, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26
-l		list LUN information	4.7.7, 5.8
	8	Diagnostics Menu:	4.8
-ping		ping target	4.8.1, 5.17
-lb		perform a loopback test	4.8.2, 5.18
-rwt		perform a read/write buffer test	4.8.3, 5.19
-stat		display HBA statistics	4.8.4, 5.32
-vpd	9	Display VPD information	4.9, 5.46
—	10	Set working adapter	4.10
—	11	Exit SANsurfer iSCSI HBA CLI	—
-ps	—	Display persistent (bound targets)	5.11
-h	—	Display help file	5.6

Section 3

Initial Installation

The following requirements must be met before you can run SANsurfer iSCSI HBA CLI:

- The HBAs must be installed.
- The HBA drivers must be installed.
- You need approximately 1 MB on the PC hard disk to install the SANsurfer iSCSI HBA CLI application.

NOTE: SANsurfer iSCSI HBA CLI is an application developed to configure QLogic HBAs. It can only configure HBAs on the local machine upon which the application is installed; it cannot configure HBAs on remote machines.

3.1 Installation Instructions

Perform the following steps to download the SANsurfer iSCSI HBA CLI installation package from the QLogic Web site:

1. From the QLogic home page (www.qlogic.com), click **Support**.
2. Click **Drivers, Software, and Manuals**.
3. Select your HBA.
4. Click the appropriate operating system under the **Drivers and Management Software** heading.
5. In the SANblade CLI row of the table, click **Download**.
6. The **File Download** dialog box displays. Click **Save**. Select a directory on your system and download the file.

   The installation package has the following naming convention:

   `iscli-AA.BB.CC-DD_<OS Type>_<Subtype>.<Install Type>`

   Where:

   `AA.BB.CC-DD` = Version number

   `OS Type` = One of the following:
   win
   linux
   solaris

Subtype = One of the following:
i386
ppc64
sparc_x86
There is no Subtype in the Windows package name.

Install Type = One of the following:
rpm (Linux)
exe (Windows)
Z (Solaris)

For example, a package for the Linux operating system can be named:

```
iscli-1.0.35-0_linux_i386.rpm
```

7. Follow the installation instructions in the section that corresponds to your operating system (OS):
   - Windows 2000 Server, Advanced Server, Professional, and Windows Server 2003 (see section 3.1.1)
   - Red Hat/SuSE Linux/PPC (see section 3.1.2)
   - Solaris SPARC/Solaris x86 (see section 3.1.3)

3.1.1 Windows

Perform the following steps to install SANsurfer iSCSI HBA CLI:

1. Locate and double-click the install package you downloaded in section 3.1.
2. The Setup program for SANsurferiCLI launches. The **Welcome** dialog box displays (see figure 3-1). Read the information, then click **Next**.

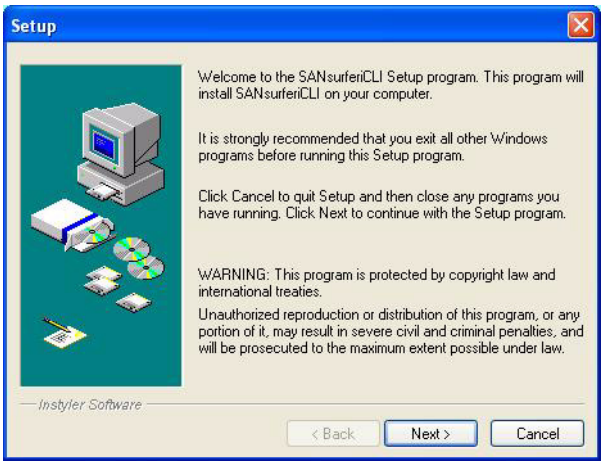
Setup
Welcome to the SANsurferiCLI Setup program. This program will install SANsurferiCLI on your computer.
It is strongly recommended that you exit all other Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Instyler Software
< Back
Next >
Cancel

Figure 3-1. Welcome Dialog Box

3. The **Destination Folder** dialog box displays (see figure 3-2).

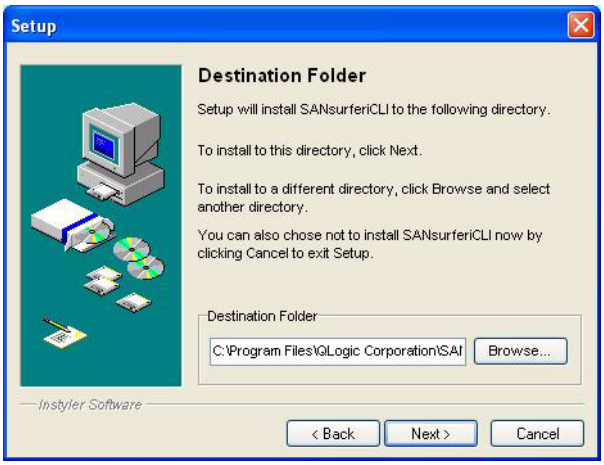
Setup
Destination Folder
Setup will install SANsurferiCLI to the following directory.
To install to this directory, click Next.
To install to a different directory, click Browse and select another directory.
You can also chose not to install SANsurferiCLI now by clicking Cancel to exit Setup.
Destination Folder
C:\Program Files\QLogic Corporation\SAI
Browse...
Instyler Software
< Back
Next >
Cancel

Figure 3-2. Destination Folder Dialog Box

Do one of the following:

- To select the destination location displayed in the dialog box, click **Next** (recommended).

  The default location for a Windows system is:
  Program Files\QLogic Corporation\SANsurferiCLI

- To select a different location:

  a. Click **Browse**.

  b. Select the desired location.

  c. The **Destination Folder** dialog box redisplays. Click **Next**.

4. The **Start menu entries** dialog box displays (see figure 3-3).

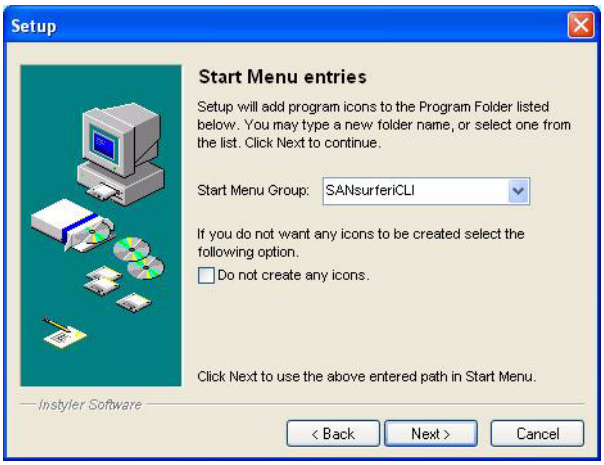
Setup
Start Menu entries
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the list. Click Next to continue.
Start Menu Group:
SANsurferiCLI
If you do not want any icons to be created select the following option.
Do not create any icons.
Click Next to use the above entered path in Start Menu.
Instyler Software
< Back
Next >
Cancel

Figure 3-3. Start Menu Entries Dialog Box

Do one of the following:

- To select the start menu group displayed in the dialog box, click **Next** (recommended).
- To select a different group, do one of the following:
  - To select an existing group, select a group from the **Start Menu Group** drop-down box.
  - To create a new group, type a name in the **Start Menu Group** drop-down box.

If you do not want a short-cut icon on the desktop, click the checkbox next to the **Do not create any icons** prompt.

Click **Next**.

5. The **Start copying files** dialog box displays (see figure 3-4). Read the information, then click **Next**.

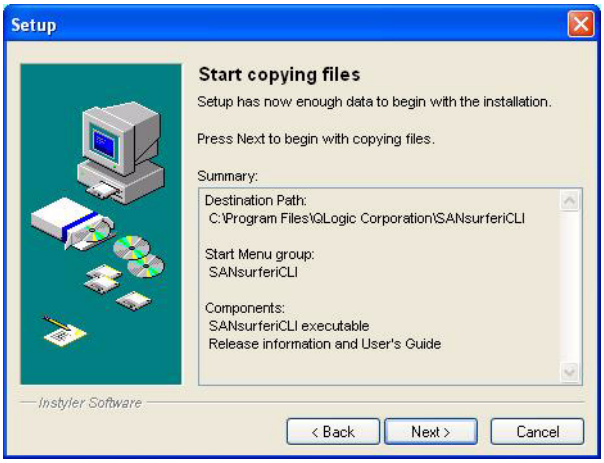

Figure 3-4. Start Copying Files Dialog Box

6. After the program is installed, the **Setup complete** dialog box displays. Click **Finish**.

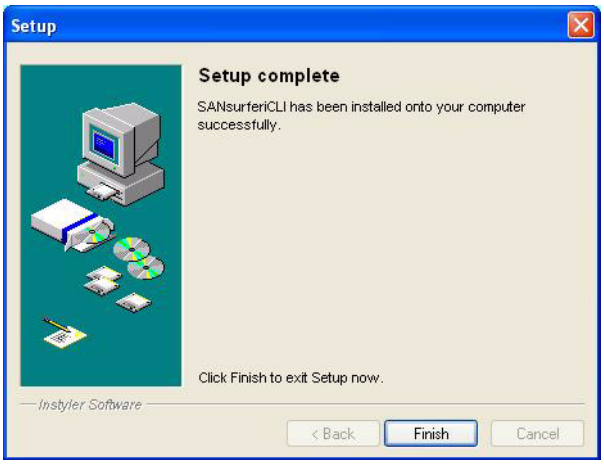

Figure 3-5. Setup Complete Dialog Box

7. The following message displays:

```
SAnsurferiCLI can be executed from a command prompt with the
command "iscli", however you must restart your computer to
```

```
activate this feature. The start menu and desktop shortcuts
are ready and active now.
```

Click **OK**.

8. Restart your computer.

3.1.2 Red Hat/SuSE Linux/PPC

To install SANsurfer iSCSI HBA CLI on a Red Hat/SuSE Linux/Power PC (PPC) operating system, type the following from the command prompt:

```
rpm -i iscli-AA.BB.CC-DD_linux_<Subtype>.rpm
```

In Red Hat, the files are automatically placed in the directory /opt/QLogic_Corporation/SANsurferiCLI. In addition, a soft link is created from the /usr/local/bin directory to the executable, *iscli*. By default, the /usr/local/bin directory is in the execution path, so you do not need to add it manually.

In SuSE Linux/PPC, the /usr/local/bin directory is *not* in the execution path by default, so you must add it manually.

3.1.3 Solaris SPARC/Solaris x86

Perform the following steps from the command prompt to install SANsurfer iSCSI HBA CLI on a Solaris SPARC/Solaris x86 operating system:

1. Type the following to uncompress the installation package you downloaded in section 3.1:

```
uncompress iscli-AA.BB.CC-DD_solaris_sparc_x86.Z
```

2. To install SANsurfer iSCSI HBA CLI on a Solaris SPARC/Solaris x86 operating system, type the following:

```
pkgadd -d iscli-AA.BB.CC-DD_solaris_sparc_x86
```

The files are automatically placed in the directory /opt/QLogic_Corporation/SANsurferiCLI. This directory is automatically added to the execution path.

3.2 Uninstall Instructions

Follow the instructions in the section that corresponds to your OS:

- Windows (see section 3.2.1)
- Red Hat/SuSE Linux/PPC (see section 3.2.2)
- Solaris (see section 3.2.3)

3.2.1 Windows

Perform the following steps to uninstall SANsurfer iSCSI HBA CLI:

1. From the **Start** menu, select **Control Panel**.
2. Click **Add/Remove Programs**.
3. Select **SANsurferiCLI**.
4. Click **Change/Remove**.

3.2.2 Red Hat/SuSE Linux/PPC

To uninstall SANsurfer iSCSI HBA CLI on a Red Hat/SuSE Linux/PPC operating system, type the following from a command prompt:

`rpm -e iscli-AA.BB.CC-DD` (be sure to omit the rest of the package name)

3.2.3 Solaris SPARC/Solaris x86

To uninstall SANsurfer iSCSI HBA CLI on a Solaris SPARC/Solaris x86 operating system, type one of the following commands:

`pkgrm QLisclix86` (Solaris x86)

or

`pkgrm QLisclisparc` (Solaris SPARC)

Section 4

Interactive Mode Commands

The following sections describe the interactive command line options listed in table 2-1. See section 5 for a description of the commands available in non-interactive (command line) mode.

Before making a selection from the Main Menu, specify the HBA whose settings you want to view or change by performing the following steps:

1. From the Main Menu, type `10` (**Set Working Adapter**), then press ENTER.
2. A list of iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.

4.1 Display General System Information (Command Line Option -g)

When this option is selected, the following information is displayed:

- Host name
- Host version
- Host type

4.2 Display Program Version Information (Command Line Option -ver)

When this option is selected, the following information is displayed:

- iSCSI HBA CLI program version
- iSCSI SAN device manager API (iSDMAPI)

4.3 List All QLogic iSCSI HBAs Detected (Command Line Option -i)

When this option is selected, the following information is displayed for all the HBA ports in the system:

- HBA model (HBA name, for example, QLA4010)
- HBA serial number
- HBA port number

- iSCSI name (HBA port iSCSI name. The QLogic manufacturing default name or a name that you assign.)
- Alias (HBA port iSCSI alias name. Symbolic name you assign to the HBA for identification purposes.)
- IP address (IP address of the HBA port)
- Instance (driver ID number)

For example:

```
1.   HBA Model: QLA4052C   HBA Serial Number: FS20525B03135  HBA Port: 0
     iSCSI name: iqn.1991-05.com.micorsfot:al-ibm
     Alias: MYHBA
     IP Address: 192.168.3.7   Instance #: 0
2.   HBA Model: QLA4052C   HBA Serial Number: FS20525B03135  HBA Port: 1
     iSCSI name: iqn.1991-05.com.micorsfot:al-ibm
     Alias: MYHBA
     IP Address: 192.168.3.8   Instance #: 1
```

4.4 HBA Options Menu

Before making a selection from the HBA Options Menu, perform the following steps:

1. Specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER.
2. A list of HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.
3. Make changes in the submenus, as described in the following sections:
   - HBA Network Settings (see section 4.4.1)
   - HBA Firmware Settings (see section 4.4.2)
   - HBA Bootcode Settings (see section 4.4.3)
   - HBA Restore Factory Defaults (see section 4.4.4)

   a. For each submenu, save the changes by typing the number for the **Save changes and reset HBA** option, then press ENTER.

   b. To update the firmware with these changes, type the number for the **Refresh** option, then press ENTER. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.4.1
HBA Network Settings Menu

Perform the following steps to make changes to the HBA network settings:

1. Specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER.
2. A list of all iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.
3. Make changes in the submenus, as described in the following sections:
   - Display network settings (see section 4.4.1.1)
   - Configure IP settings (see section 4.4.1.2)
   - Set iSNS settings (see section 4.4.1.3)

   a. For each submenu, save the changes by typing the number for the **Save changes and reset HBA** option, then press ENTER.

   b. To update the firmware with these changes, type the number for the **Refresh** option, then press ENTER. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.4.1.1
Display Network Settings (Command Line Options -netconf and -slp)

When this option is selected, settings for dynamic host configuration protocol (DHCP), SLP, and iSNS are displayed. For example:

```
Using DCHP to obtain an IP Addresses.
IP Address          :0.0.0.0
Gateway             :0.0.0.0
Subnet Mask         :0.0.0.0

Using DCHP to obtain DNS Addresses.
DNS Address         :0.0.0.0

SLP Enabled.
Using DCHP to obtain DA Address.

iSNS Disabled.
```

4.4.1.2
Configure IP Settings (Command Line Option -ipdhcp)

This submenu allows you to enable or disable the following features:

- Dynamic host configuration protocol (DHCP)
  - to obtain TCP information
  - to obtain DNS information (only available if DHCP for TCP information is on)
  - to obtain SLP information (only available if SLP is on)

- Service locator protocol (SLP)
  - Auto discover DA (only available if SLP is on)

You are prompted to turn on or off each feature; the current state is shown at the end of the prompt. For example, the following prompt indicates that DHCP is turned on to obtain TCP information:

```
DHCP to obtain TCP information [on]:
```

To change this setting, type `off`, then press ENTER (be sure to turn off the CAPS LOCK key; entries are case sensitive). If you don't want to change this setting, press ENTER.

In the following example, **DCHP to obtain TCP Information** is turned off and **SLP** is turned on. You are prompted to manually enter the information. The current setting is enclosed in brackets at the end of the prompt. If you don't want to change the setting, press ENTER.

```
DHCP to obtain TCP information [off]:
IP_Address [192.168.3.5]:
IP_Subnet_Mask [255.255.0.0]:
IP_Gateway [0.0.0.0]:
Primary DNS [0.0.0.0]
SLP: [on]:
Auto Discover DA: [on]
```

4.4.1.2.1
Using DHCP

By default, DHCP is disabled. Turn on DHCP if your system has a server that automatically provides the IP address and gateway.

To *automatically* obtain the IP address, subnet mask, gateway, and primary DNS address, type `on` at the **DHCP to obtain TCP Information** prompt.

To *manually* assign the IP address, subnet mask, gateway, and primary DNS address, type `off` at the **DHCP to obtain TCP Information** prompt (default). Enter the addresses at the appropriate prompt.

4.4.1.2.2
Using SLP

By default, the service locator protocol (SLP) is disabled.

To enable SLP, press ENTER until the **SLP: [off]:** prompt displays. Type `on`, then press ENTER.

4.4.1.3
iSNS Settings (Command Line Option -isns)

By default, iSNS is disabled.

Use iSNS when extended discovery management capabilities (such as notifications, access management, and configuration) are required, such as in larger storage networks.

To enable iSNS, type `on` at the SLP prompt, then press ENTER. You are prompted to enter an iSNS IP address.

4.4.2
HBA Firmware Settings Menu

Perform the following steps to make changes to the HBA firmware settings:

1. Specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER.
2. A list of all iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.
3. Make changes in the submenus, as described in the following sections:
   - Display Configured HBA Settings (see section 4.4.2.1)
   - Change HBA Alias Name (see section 4.4.2.2)
   - Edit Configured Hba Settings Menu (see section 4.4.2.3)
   - Restore Default HBA Settings (see section 4.4.2.4)
   - Update Firmware Image (see section 4.4.2.5)
   - Update ROM Image (see section 4.4.2.6)
   - Get Crash Record (see section 4.4.2.7)

   a. For each submenu, save the changes by typing the number for the **Save changes and reset HBA** option, then press ENTER.

   b. To update the firmware with these changes, type the number for the **Refresh** option, then press ENTER. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.4.2.1
Display Configured HBA Settings (Command Line Option -c)

When this option is selected, all of the firmware parameters and their values are displayed for the HBA port. The firmware settings are described in table 4-1.

Table 4-1. HBA Firmware Settings

Parameter	Value	Description
FW_Marker[a]	on, off	When this parameter is on, the HBA does not require the driver to send a Marker IOCB to cause the HBA to resume IOCB processing following a task management mailbox command. When this parameter is off, the HBA rejects any IOCB for a device affected by a task management command until the driver issues a Marker IOCB to synchronize the SCSI request queue between the HBA and the driver.
FW_Stat_Alarm[a]	on, off	When this parameter is on and one or more of the 64-bit Protocol Statistics registers maintained by the firmware are within 10 percent of the maximum count value, a protocol statistics alarm asynchronous event is generated.
FW_Accept_AEN[a]	on, off	When this parameter is on and the HBA is configured as a target, the firmware generates a device database change asynchronous event when a new connection is accepted.
FW_Access_Control[a]	on, off	When this parameter is on, the HBA will not enter iSCSI full feature mode with an initiator until the initiator is authorized by the target driver.
FW_Session_Mode[a]	on, off	When this parameter is on, the HBA operates in session mode. When this parameter is off, the HBA operates in connection mode.
FW_Initiator_Mode[a]	on, off	When this parameter is on, the HBA is in initiator mode.
FW_Target_Mode[a]	on, off	When this parameter is on, the HBA is in target mode.
FW_Fast_Posting[a]	on, off	When this parameters is on, posting SCSI command completions is allowed for multiple SCSI commands during a single system interrupt.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
FW_Sense_Buffer_Desc[a]	on, off	When this parameter is on, the HBA expects the last data segment descriptor of the data descriptor list associated with a Command Type 3 IOCB to be a descriptor of a sense buffer. When this parameter is off, the HBA passes any sense data returned by the target in a status IOCB.
FW_ZIO_Enable_Mode	on, off	When this parameter is on, the firmware minimizes the number of interrupts it generates to the host driver. Firmware continues to post completions to the queue without interrupting the driver for each completion. When the ZIO count threshold (ZIO parameter) is reached, the host driver is interrupted. This interruption notifies the host driver that there is something in the queue that must be drained. When an I/O completes before the ZIO count threshold, the host driver is interrupted, so that it can drain all the completions for the I/Os.
AFW_Device_Timeouts	on, off	When this parameter is on, the HBA firmware ignores the IOCB command timeout values specified by the host.
AFW_Delayed_Ack	on, off	This parameter determines what occurs when the HBA receives a Data-In PDU with the Final bit set and no status reported. When this parameter is on, the HBA sends a TCP acknowledgment immediately (this is the default value). When this parameter is off, the HBA delays the acknowledgment and waits for more data.
AFW_AutoConnect	on, off	When this parameter is on, the HBA will not attempt to autoconnect to the configured target devices at boot time. Instead, the host must issue Set Device Database Entry commands (0063h) to establish connections to targets.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
Large_Frames[a]	on, off	This parameter defines the maximum length of an Ethernet frame. When this parameter is on, the frame length is 9000. When this parameter is off, the frame length is 1500. This length determines when to fragment IP datagrams and the maximum size of a received frame. When this size is exceeded, the frame is discarded for being too long.
DevType	—	This parameter is not supported.
ExeThrottle	0–65535	This parameter specifies the execution throttle value. The execution throttle is used by the firmware to limit the number of concurrently executing commands.
FirstBurstLen	0–3267 units (512 to 16 MB-1 bytes)	This parameter indicates the maximum length for unsolicited data. The HBA uses this information when negotiating with a device during the login phase. This parameter indicates how many units (512 bytes/unit) of unsolicited data the HBA can send/receive. A value of 0 indicates unlimited data units.
IP_Fragmentation[a]	on, off	When this parameter is on, the HBA cannot fragment IP datagrams. When this parameter is off, the HBA fragments IP datagrams as necessary.
IP_ARP_Redirect	on, off	When this parameter is on, MAC addresses are discovered and bound to IP addresses for hosts to which the HBA wants to talk.
VLAN_Enable	on, off	When this parameter is on, VLAN filtering is enabled for the HBA.
VLAN_User_Priority	0–7	When the VLAN_Enable parameter is on, this 16-bit field is appended to outbound Ethernet frames for the TCP connection.
VLAN_ID	0–4095	When t he VLAN_Enable parameter is on, this 12-bit ID (appended to inbound Ethernet frames) much match the ID configured for that interface.
iSCSI_Receive_Markers[a]	on, off	This parameter is not supported.
iSCSI_Send_Markers[a]	on, off	This parameter is not supported.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
iSCSI_Header_Digests	on, off	When this parameter is on, iSCSi headers with CRC protection can be transmitted. In addition, incoming iSCSI headers are validated and CRC protection is removed.
iSCSI_Data_Digests	on, off	When this parameter is on, iSCSi data with CRC protection can be transmitted. In addition, incoming iSCSI data is validated and CRC protection is removed.
iSCSI_Immediate Data	on, off	When this parameter is on, the HBA firmware negotiates (during login phase) for Immediate Data=yes. When this parameter is off, immediate data is disabled and the firmware negotiates for ImmediateData=no.
iSCSI_Initial_R2T	on, off	When this parameter is on, the HBA negotiates (during the login phase) for InitialR2T=yes. When this parameter is off, initial R2T is disabled and the HBA negotiates for InitialR2T=no.
iSCSI_Data_Seq_In_Order[a]	on, of	When this parameter is on, the system driver reports the DataSequenceInOrder value negotiated during login to the HBA firmware.
iSCSI_Data_PDU_In_Order[a]	on, off	When this parameter is on, the system driver reports the DataPDUInOrder value negotiated during login to the HBA firmware.
iSCSI_CHAP_Auth[a]	on, off	When this parameter is on, the HBA performs authentication (during the security stage of the login phase).
iSCSI_Bidi_CHAP_Auth[a]	on, off	When this parameter is on, the HBA (as an initiator) generates a CHAP challenge to any target that has issued a CHAP challenge to the HBA. This bit is ignored if the iSCSI_CHAP_Auth parameter is off.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
iSCSI_Snack	on, off	When this parameter is on and the FW_Initiator_Mode parameter is on, the HBA firmware sends SNACK requests to the target when it detects missing PDUs. When this parameter is off and the FW_Initiator_Mode parameter is on, the firmware aborts the command and/or closes the connection when missing PDUs are detected.
iSCSI_Discovery_Logout	on, off	When this parameter is on, the HBA initiates an iSCSI logout on a discovery session when discovery is complete (before closing the connection). When this parameter is off, the HBA closes the TCP connection when discovery is complete.
iSCSI_Strict_Login	on, off	When this parameter is on, the HBA adheres to the iSCSI login rules, and therefore cannot operate with devices that do not conform to these rules. When this parameter is off, the iSCSI login rules are relaxed, and the HBA can operate with devices that do not conform to these rules.
iSCSI_Error_Recovery_Level[a]	on, off	When this parameter is on, the HBA supports iSCSI error recovery level 0. At this level, the HBA closes a connection if it detects any errors.
KeepAliveTO	0–65535 seconds	This parameter indicates the time interval (in seconds) between connection keep-alive pings. When a connection is idle for the connection keep-alive timeout interval, the HBA sends an NOP ping to the other device that is part of the connection. When the device responds to the ping, the connection remains open. When the device fails to respond, the HBA closes the connection and informs the driver that the connection has gone down. The maximum keep-alive time is 18 hours.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
DefaultTime2Retain[a]	0–65535 seconds	This parameter indicates the maximum logout time (in seconds) the HBA uses when negotiating with a device during the login phase.
DefaultTime2Wait[a]	0–65535 seconds	This parameter indicates the minimum logout time (in seconds) the HBA uses when negotiating with a device during the login phase.
MaxBurstLen	0–32767 units (512 to 16 MB-1 bytes)	This parameter indicates the maximum length for data sequences the HBA uses when negotiating with a device during the login phase. This parameter indicates how many units (512 bytes/unit) of data the HBA can send/receive. A value of 0 indicates unlimited data units.
MaxOutstandingR2T	1–65535	This parameter indicates the maximum number of outstanding R2Ts the HBA uses when negotiating with a device during the login phase. This parameter indicates how many R2Ts can be outstanding on a SCSI task.
MaxRxDataSegmentLen[a]	0–65535	This parameter indicates the maximum data segment size (in 512-byte units) that the HBA can receive in one PDU.
Port[a]	0–65535	This parameter specifies the port number on which the HBA listens for iSCSI connections (when operating as a target). When the HBA is configured only as an initiator, this parameter is ignored. The default iSCSI port number is 3260.
TCP_SLP_Use_DA	on, off	When this parameter is on, the SLP DA Address field contains the IP address of the service locator protocol directory agent (SLP DA) used by the HBA SLP services. DA discovery is disabled.
TCP_Auto_Discovery	on, off	When this parameter is on, the HBA automatically discovers target devices and creates device database entries for all devices discovered.
TCP_SLP_UA	on, of	When this parameter is on, the HBA is enabled as an initiator to make UA SLP queries to discover iSCSI targets.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
TCP_SLP_SA	on, off	When this parameter is on, the HBA is enabled as an initiator to make SA SLP queries to discover iSCSI targets.
TCP_DHCP	on, off	When this parameter is on, the HBA utilizes DHCP to obtain its IP address, gateway IP address, and subnet mask.
TCP_DNS_Via_DHCP	on, off	When this parameter is on and the TCP_DHCP parameter is on, the HBA obtains the DNS server address from the DHCP server.
TCP_SLP_DA_Via_DHCP	on, off	When this parameter is on and the TCP_DHCP parameter is on, the HBA obtains the SLP DA address from the DHCP server.
TCP_Nagle	on, off	When this parameter is on, the HBA supports the Nagle algorithm. Therefore, when a TCP connection has outstanding data that has not been acknowledged (ACK'd), small data segments cannot be sent until the ACKs arrive. These data segments are collected by TCP and sent in a single segment when the ACKs arrive. This feature helps control congestion.
TCP_Timer_Scale[a]	—	Each TCP timer in the HBA is referenced to a local timer and is defined as a number of local timer ticks. The TCP_Timer_Scale parameter is a scale factor that adjusts the time interval between timer ticks on a per connection basis. The scale factor allows for faster timeouts for connections running on a very small network, versus connections running on a very large network.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
TCP_Time_Stamp	on, off	When this parameter is on, a timestamp is placed in every transmitted TCP segment. When the receiver responds with an acknowledge (ACK), the timestamp is included. Consequently, the transmitter can calculate the round trip time (RTT) of the ACK. This value is used for calculating retransmissions (if necessary). When this parameter is off, RTT can only be calculated on one outstanding segment at a time (rather than on each segment).
iSCSI_Name[a]	—	The target iSCSI name as defined by the iSCSI standard.
iSCSI_Alias	—	The target iSCSI alias name as defined by the manufacturer software.
IP_Address	—	The IP address of the target.
IP_Subnet Mask	—	This parameter sets the subnet mask for the HBA. This parameter is a four-character array.
IP_Gateway	—	This parameter indicates the IP address of the gateway that is available to the HBA.
Primary_DNS	—	This parameter contains the IP address of the primary DNS server that the HBA uses for obtaining the IP addresses of the iSCSI devices.
Secondary_DNS[a]	—	This parameter contains the IP address of the secondary DNS server that the HBA uses for obtaining the IP addresses of the iSCSI devices.
Secondary_IP_Address[a]	—	This parameter specifies the secondary IP address that the HBA uses for iSCSI transport and related operations.

Table 4-1. HBA Firmware Settings (Continued)

Parameter	Value	Description
SLP_Address	—	This parameter specifies where to look for the SLP server.
ZIO	08h	This parameter indicates the number of completions the firmware posts to the completion queue before interrupting the host driver to indicate that there are items in the queue. This parameter is valid only when the FW_ZIO_Enable_Mode parameter is on.

Table Notes

[a]Read only

4.4.2.2
Change HBA Alias Name

NOTE: This option is not available in non-interactive mode.

The HBA alias is a symbolic name you assign to the HBA for identification purposes. To assign an HBA alias, enter the name at the prompt. The name can have between 0 and 255 characters, and must be terminated with at least one NULL character.

The HBA alias' are communicated between the initiator and target at login, and can be displayed on the PC monitor on both sides, making it easy to see if the initiators and/or targets are correct. Do not use the alias to identify, address, or authenticate initiators and targets.

4.4.2.3
Edit Configured HBA Settings Menu

Perform the following steps to edit the configured HBA settings:

1. Specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER.
2. A list of all iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.
3. Make changes in the submenus, as described in the following sections:
   - Edit a Specific HBA Setting (see section 4.4.2.3.1)
   - Configure iSCSI Settings (see section 4.4.2.3.2)
   - Configure Firmware Settings (see section 4.4.2.3.3)
   - Configure Device Settings (see section 4.4.2.3.2)
   - Configure Basic Settings (see section 4.4.2.3.5)
   - Configure Advanced Settings (see section 4.4.2.3.6)

a. For each submenu, save the changes by typing the number for the **Save changes and reset HBA** option, then press ENTER.

b. To update the firmware with these changes, type the number for the **Refresh** option, then press ENTER. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.4.2.3.1
Edit a Specific HBA Setting

Use this option when you know the name and parameters of the settings you want to change (see table 4-1 for a list of parameter names and values). All of these parameters are also available in the following options from the Firmware Configuration Menu:

- Configure iSCSI Settings (see section 4.4.2.3.2)
- Configure Firmware Settings (see section 4.4.2.3.3)
- Configure Device Settings (see section 4.4.2.3.2)
- Configure Basic Settings (see section 4.4.2.3.5)
- Configure Advanced Settings (see section 4.4.2.3.6)

Perform the following steps to edit specific HBA settings:

1. At the **Enter the HBA parameter to modify:** prompt, enter the name of the parameter you want to change (see table 4-1 for a list of parameter names and values).
2. At the **Enter the HBA parameter value:** prompt, enter the new value.
3. The **Enter the HBA parameter to modify:** prompt re-displays. Do one of the following:
   a. To modify another parameter, repeat steps 1 and 2.
   b. When you are done, press ENTER. The HBA Firmware Configuration Menu displays.

4.4.2.3.2
Configure iSCSI Settings (Command Line Option -n)

This option allows you to modify the following HBA iSCSI settings:

- iSCSI_Header_Digests
- iSCSI_Data_Digests
- iSCSI_Immediate_Data
- iSCSI_Initial_R2T
- iSCSI_Snack
- iSCSI_Discovery_Logout

- iSCSI_Strict_Login
- iSCSI_Alias

Each setting is displayed with the current value in brackets, for example:

```
iSCSI_Snack [off] :
```

To change the value, type the new value after the prompt. To keep the current value, press ENTER at the prompt. The next iSCSI setting displays. The settings are displayed one-by-one, in the order shown in the above list.

These settings are described in table 4-1.

4.4.2.3.3
Configure Firmware Settings

This option allows you to modify the following firmware settings:

- FW_ZIO_Enable_Mode
- AFW_Device_Timeouts
- AFW_Delayed_ACK
- AFW_AutoConnect

Each setting is displayed with the current value in brackets, for example:

```
AFW_Device_Timeouts [on] :
```

To change the value, type the new value after the prompt. To keep the current value, press ENTER at the prompt. The next firmware setting displays. The settings are displayed one-by-one, in the order shown in the above list.

These settings are described in table 4-1.

4.4.2.3.4
Configure Device Settings

This option allows you to modify the following device settings:

- iSCSI_Snack
- iSCSI_Discovery_Logout
- iSCSI_Strict_Login
- TCP_SLP_Use_DA
- TCP_Auto_Discovery
- TCP_SLP_UA
- TCP_SLP_SA
- TCP_DHCP
- TCP_DNS_Via_DHCP
- TCP_SLP_SA_Via_DHCP
- TCP_Nagle
- iSCSI_Alias
- IP_Address

- IP_Subnet_Mask
- IP_Gateway
- Primary_DNS
- SLP_Address

Each setting is displayed with the current value in brackets, for example:

```
Primany_DNS [0.0.0.0] :
```

To change the value, type the new value after the prompt. To keep the current value, press ENTER at the prompt. The next device setting displays. The settings are displayed one-by-one, in the order shown in the above list.

These settings are described in table 4-1.

4.4.2.3.5

Configure Basic Settings

This option allows you to modify the following settings:

- iSCSI_Snack
- iSCSI_Discovery_Logout
- iSCSI_Strict_Login
- TCP_SLP_Use_DA
- TCP_Auto_Discovery
- TCP_SLP_UA
- TCP_SLP_SA
- TCP_DHCP
- TCP_DNS_Via_DHCP
- TCP_SLP_SA_Via_DHCP
- TCP_Nagle
- iSCSI_Alias
- IP_Address
- IP_Subnet_Mask
- IIP_Gateway
- Primary_DNS
- SLP_Address

Each setting is displayed with the current value in brackets, for example:

```
Primany_DNS [0.0.0.0] :
```

To change the value, type the new value after the prompt. To keep the current value, press ENTER at the prompt. The next device setting displays. The settings are displayed one-by-one, in the order shown in the above list.

4.4.2.3.6

Configure Advanced Settings

This option allows you to modify the following settings:

- FW_ZIO_Enable_Mode
- AFW_Device_Timeouts
- AFW_Delayed_Ack
- AFW_AutoConnect
- ExeThrottle
- FirstBurstLen
- IP_ARP_Redirect
- VLAN_Enable
- VLAN_User_Priority
- VLAN_ID
- iSCSI_Header_Digests
- iSCSI_Data_Digests
- iSCSI_Immediate_Data
- iSCSI_Initial_R2T
- KeepAliveTO
- MaxBurstLen
- MaxOutstandingR2T
- TCP_Time_Stamp
- ZIO

Each setting is displayed with the current value in brackets, for example:

```
KeepAliveTO [30] :
```

To change the value, type the new value after the prompt. To keep the current value, press ENTER at the prompt. The next setting displays. The settings are displayed one-by-one, in the order shown in the above list.

These settings are described in table 4-1.

4.4.2.4

Restore Default HBA Settings (Command Line Option -rdf)

This option allows you to reset the firmware to the factory defaults. Be sure to select both the **Save changes and reset HBA** and **Refresh** options afterwords; otherwise, the changes will not take effect.

WARNING!! These new settings will not apply to currently configured targets, unless they are first deleted and then configured again after the HBA is reset.

4.4.2.5
Update Firmware Image (Command Line Option -f)

This option updates the firmware image. At the prompt, enter the name of the file containing the firmware image to upload to the HBA.

NOTE:

- Before updating the firmware, be sure that no I/O processes are running.
- Be sure to select the **Save changes and reset HBA** option afterwards; otherwise, the change will not take effect.

4.4.2.6
Update ROM Image (Command Line Option -r)

This option updates the ROM image. At the prompt, enter the name of the file containing the ROM image to upload to the HBA.

NOTE:

- Before updating the ROM image, be sure that no I/O processes are running.
- Be sure to select the **Save changes and reset HBA** option afterwords; otherwise, the change will not take effect.

4.4.2.7
Get Crash Record (Command Line Option -gcr)

This option allows you to obtain crash record information for the HBA. At the prompt, enter a name and location for the crash file, then press ENTER. For example:

```
Crash File Name: c:\QLogic_Corporation\iscli\crash_record
```

4.4.3
HBA Bootcode Settings Menu

NOTE: If the BIOS version is less than 1.04, the **Set Bootcode Mode** option is not supported (an error message is displayed).

Perform the following steps to edit the HBA bootcode settings:

1. Specify the HBA port whose settings you want to view or change by typing the number for **Set Working Adapter** option, then press ENTER.
2. A list of all iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.

3. Make changes in the submenus, as described in the following sections:
   - Display Bootcode Information (see section 4.4.3.1)
   - Set Bootcode Mode (see section 4.4.3.2)
   - Set Primary Boot Target Information (see section 4.4.3.3)
   - Set Secondary Boot Target Information (see section 4.4.3.4)
   - Clear Primary Boot Target Information (see section 4.4.3.5)
   - Clear Secondary Boot Target Information (see section 4.4.3.6)
   - Set Alternative Client ID (see section 4.4.3.7)
   - Update Bootcode Code Image (see section 4.4.3.8)

   a. For each submenu (except Update Bootcode code Image), save the changes by selecting **Save changes** option.

   b. To update the firmware with these changes, select the **Refresh** option. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.4.3.1
Display Bootcode Information (Command Line Option -binfo)

This option displays the following information about the bootcode:

- Mode
- Primary target ID
- Secondary target ID
- Vendor ID
- Alternate client ID
- Version

4.4.3.2
Set Bootcode Mode (Command Line Option -bootcodemode)

NOTE: If the BIOS version is less than 1.04, this option is not supported (an error message is displayed).

This option allows you to select one of the following bootcode modes:

- Bootcode mode enabled or disabled
- Bootocode manual mode
- Bootcode DHCP mode (not available unless DCHP is enabled)

4.4.3.3
Set Primary Boot Target Information (Command Line Option -pbootcode)

This option allows you to select the primary target from which to boot. At the prompt, enter a target ID and associated LUN.

4.4.3.4
Set Secondary Boot Target Information (Command Line Option -sbootcode)

This option allows you to select the secondary target from which to boot. At the prompt, enter a target ID and associated LUN.

4.4.3.5
Clear Primary Target Information (Command Line Option -cpbootcode)

This option allows you to disable the primary boot target. At the prompt, enter a target ID and associated LUN.

4.4.3.6
Clear Secondary Primary Target Information (Command Line Option -csbootcode)

This option allows you to disable the secondary boot target. At the prompt, enter enter a target ID and associated LUN.

4.4.3.7
Set Alternative Client ID (Command Line Option -sbootcodecid)

This option allows you to assign an optional alternate client ID, which can be used in boot DHCP mode. The ID can be seven characters maximum.

4.4.3.8
Update Bootcode Code Image (Command Line Option -bootcode)

This option updates the bootcode code image, which should be done when QLogic releases a new bootcode with bug fixes or enhancements. At the prompt, enter the name of the file containing the bootcode code image to upload to the HBA.

4.4.4
HBA Restore Factory Defaults (Command Line Option -rdh)

NOTE: This option is not supported in the QLA4010 HBA.

This option updates the HBA factory default settings for the following HBA modules:

- Firmware parameters
- Network settings (IP, Netmask, DNS, …)
- iSCSI name
- Target settings
- CHAP settings
- NVRAM settings

After selecting this option, you are asked if you want to restore all of the factory defaults in the above list. Do one of the following:

- If you want to restore all the defaults, press ENTER.
- If you want to restore some of the defaults, type `no`, then press ENTER. Each setting displays one-by-one, in the order listed above. To restore the factory default for that setting, type `yes`, then press ENTER. If you do not want to restore this setting, type `no`, then press ENTER.

The HBA is reset after the parameters are restored.

4.5
HBA Information (Command Line Option -pinfo)

When this option is selected, the following information is displayed about the working adapter (see section 4.10):

- Board type
- Chip version
- Serial number
- MAC address
- Driver version
- Firmware version
- ROM version
- iSCSI version
- Bootcode version
- Connection type
- Portal flow control
- Portal duplex
- Portal link speed (QLA4050/4052 HBAs)

For example:

```
iscli Main Menu
main Interactive Menu

-----------------------------------------------------
Current QLA4010 HBA/Port Information:
HBA Serial Number: FS2046A08466 HBA Port: 0
IP Address: 192.168.8.18 Link: Up
Port Name: iqn.200-04.com.qlogic:qla4010.fs20446a08466
Port Alias:
-----------------------------------------------------

 1. Display General System Information
 2. Display Program Version Information
 3. List All QLogic iSCSI HBAs detected
 4. HBA Options Menu
 5. HBA Information
 6. Reset HBA
 7. Target Menu
 8. Diagnostic Menu
 9. Display VPD Information
10. Set Working Adapter
11. Exit
enter selection:5
Board Type:          : QLA4010
Chip Version         : 4
Serial Number        : FS20446A08466
MAC Address          : 00-C0-DD-01-00-01
Driver Version       : 2.1.1.0 <SCSI w32>
Firmware Version     : 3.0.0.4
ROM Version          : 2.0.0.0
iSCSI Version:       : 0.20
Bootcode Version:    : 1.11
Connection Type      : Copper
Portal Flow Control  : off
Portal Duplex        : off
Portal Link Speed    : 1000 Mbs
Press the Enter key to continue.
```

4.6 Reset HBA (Command Line Option -b)

Select this option to reset the HBA after making configuration changes.

NOTE: Bootcode mode must be disabled (see section 4.4.3.2) for the HBA to be reset.

4.7 Target Menu

Before making a selection from the HBA Target Menu, perform the following steps:

1. Specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER.
2. A list of HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.
3. Make changes in the submenus, as described in the following sections:
   - List Targets (see section 4.7.1)
   - Bind Target (persistent binding) (see section 4.7.2)
   - Unbind Target (persistent targets only) (see section 4.7.3)
   - Configure Target Parameters (see section 4.7.4)
   - Add a Target (see section 4.7.5)
   - Configure Target Authentication menu (CHAP) (see section 4.7.6)
   - List LUN Information (see section 4.7.7)
4. To update the firmware with these changes, type `8` (**Save Target/CHAP changes**), then press ENTER.
5. Type `10` (**Refresh**), then press ENTER. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.7.1 List Targets (Command Line Option -t)

To list all targets connected to the current working adapter, type `1`, then press ENTER. The following information is displayed for each target:

- Target ID (target ID of this device as assigned by QLogic software)
- IP (IP address of the target)
- Port (port ID for iSCSI devices as defined by the iSCSI standard)
- iSCSI name (target iSCSI name as defined by the iSCSI standard)
- Alias (target iSCSI alias name as defined by the manufacturer software)
- State (The target session connection state, for example, no connection, session active, etc.)

4.7.2
Bind Target (Command Line Option -pb)

This option persistently binds a specific target to the HBA port by saving it in the HBA flash. Targets that are not persistently bound will not persist across firmware resets or HBA power cycles.

After selecting the Bind Target option, a list of available targets is displayed. At the **Enter a Target ID:** prompt, type the target ID of the target you want to bind.

4.7.3
Unbind Target (Command Line Options -pu and -px)

This option allows you to unbind one or all targets that are bound to the HBA port.

After selecting the Unbind Target option, a list of available targets is displayed. At the **Enter a Target ID or "ALL":** prompt, do one of the following:

- Type the target ID of the target you want to unbind
- Type `ALL` to unbind all the targets that are bound to the HBA port.

4.7.4
Configure Target Parameters

NOTE: This option is not available in non-interactive mode.

This option allows you to modify the following target parameters:

- TGT_iSCSI_Name
- TGT_ExeThrottle
- TGT_FirstBurstLen
- TGTISCSIO_Header_Digests
- TGTISCISO_Data_Digests
- TGTISCSIO_Immediate_Data
- TGTISCSIO_Initial_R2T
- TGTISCSIO_Snack
- TGTSCSIO_Discovery_Logout
- TGTSCSIO_Strict_Login
- TGTSCSIO_Error_Recovery_Level
- TGT_KeepAliveTimeout
- TGT_DefaultTimeout
- TGT_MaxBurstLen
- TGT_MaxOutstandingR2T
- TGT_Port
- TGTCPO_Nagle

- TGTCPO_Timestamp
- TGT_TargetIPAddress

Each setting is displayed with the current value in brackets, for example:

```
TGT_DefaultTimeout [120] :
```

To change the value, type the new value after the prompt. To keep the current value, press ENTER at the prompt. The next device setting displays. The settings are displayed one-by-one, in the order shown in the above list.

These settings are described in table 4-1.

4.7.5 Add a Target (Command Line Option -pa)

This option allows you to add a new target to the current working adapter.

Enter the following information for the new target as prompted; the parameters are displayed one at a time:

- TGT_iSCSI_Name (target iSCSI name)
- TGT_Port (target port)
- TGT_TargetIPAddress (target IP address)

When the TGT_iSCSI_Name is not specified, the default is an empty string. When a TGT_Port number is not specified, the default number 3260 is used.

4.7.6 Configure Target Authentication Menu

The iSCSI HBA firmware uses the challenge handshake authentication protocol (CHAP) as an authentication mechanism between the iSCSI initiators (QLA4*xxx* HBA ports) and the devices to which they are attached (targets). Authentication can be disabled or enabled for a specific target or for all targets attached to the QLA4*xxx* HBA port.

Perform the following steps to configure target authentication (CHAP):

1. If you haven't already, specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER.
2. A list of all iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.
3. Make changes in the submenus, as described in the following sections:
   - Display CHAP table (see section 4.7.6.1)
   - Display targets using CHAP entries (see section 4.7.6.2)
   - Assign a CHAP entry to a target (see section 4.7.6.3)

- Add a CHAP entry (see section 4.7.6.4)
- Add a default BIDI CHAP (see section 4.7.6.5)
- Edit a CHAP entry (see section 4.7.6.6)
- Delete a CHAP entry (see section 4.7.6.7)

4.7.6.1
Display a CHAP Table (Command Line Option -dspchap)

This option displays the CHAP table, which is an array of records containing CHAP names and secrets used by the HBA during CHAP authentication. For example:

```
CHAP TABLE
Entry: 1 <DEFAULT BIDI CHAP entry>
  Name:
  Secret: carla
  This is a BIDI Chap entry
Entry: 2
  Name:robert
  Secret: qlogic
Entry: 4
  Name: carla
  Secret: qlogic
Press the Enter key to continue.
```

4.7.6.2
Display Targets Using CHAP Entries (Command Line Option -chapmap)

This option displays the following information about each target that has a CHAP:

- Target ID (target ID of this device as assigned by QLogic software)
- IP address (IP address of the target)
- Port (port ID for iSCSI devices as defined by the iSCSI standard)
- iSCSI name (target iSCSI name as defined by the iSCSI standard)
- Alias (target iSCSI alias name as defined by the manufacturer software)
- Name (CHAP name)
- Secret (CHAP secret)

4.7.6.3
Assign a CHAP Entry to a Target (Command Line Option -linkchap)

Perform the following steps to assign a CHAP entry to a target:

1. From the HBA CHAP Menu, type `3` (**Assign a CHAP Entry to a Target**).
2. A list of available targets is displayed. Enter the target ID of the desired target, then press ENTER.

3. The CHAP table is displayed. At the prompt **CHAP Entry Number <0 for no CHAP>**, do one of the following:
   - Type the entry number for one of the entries in the displayed CHAP table, then press ENTER.
   - Type `0` if you do not want to assign a CHAP entry to this target, then press ENTER.

4.7.6.4
Add a CHAP Entry (Command Line Option -addchap)

Perform the following steps to add an entry to the CHAP table:

1. From the HBA CHAP Menu, type `4` (**Add a CHAP entry**), then press ENTER.
2. At the **CHAPName** prompt, enter a name for the CHAP entry, then press ENTER. The CHAP name can be up to 256 bytes long.
3. At the **CHAPSecret** prompt, enter a secret for the CHAP entry, then press ENTER. The CHAP secret can be up to 100 bytes long.
4. The **CHAPBidi [off]** prompt displays. Do one of the following:
   - If you want the HBA to authenticate the target (bidirectional CHAP), type `yes`, then press ENTER.
   - If you do not want the HBA to authenticate the target, either press ENTER (default) or type `off`, then press ENTER.

4.7.6.5
Add a Default BIDI CHAP (Command Line Option -defbidi)

A default bidirectional (BIDI) CHAP causes the HBA to authenticate only the CHAP secrets of all targets with CHAP (the CHAP names are ignored). In addition, the CHAP names of any bidirectional CHAP entries are ignored.

Perform the following steps to add a default BIDI CHAP:

1. From the HBA CHAP Menu, type 5 (**Add a Default BIDI CHAP**), then press ENTER.
2. At the **CHAPSecret [*default secret*]** prompt, do one of the following:
   - Type the name of an existing CHAP secret you want to use, then press ENTER.
   - To use the default secret displayed in the prompt, press ENTER.
3. At the **Press the Enter key to continue prompt,** press ENTER.

4.7.6.6
Edit a CHAP Entry (Command Line Option -edchap)

Perform the following steps to edit a CHAP entry:

1. From the HBA CHAP Menu, type `6` (**Edit a CHAP entry**), then press ENTER.
2. The CHAP table is displayed. Press ENTER.
3. At the prompt, type the number of the CHAP entry you want to change, then press ENTER.
4. At the **CHAPName [*default name*]** prompt, do one of the following:
   - Type a new CHAP name, then press ENTER.
   - To use the default CHAP name displayed in the prompt, press ENTER.
5. At the **CHAPSecret [*default name*]** prompt, do one of the following:
   - Type a new CHAP secret, then press ENTER.
   - To use the default CHAP secret displayed in the prompt, press ENTER.
6. At the **CHAPBidi [off *or* on]** prompt, do one of the following:
   - If you want the HBA to authenticate the target (bidirectional CHAP) and the prompt is **CHAPBidi [off],** type `on`, then press ENTER. If the prompt is **CHAPBidi [on]**, press ENTER.
   - If you do not want the HBA to authenticate the target and the prompt is **CHAPBidi [off],** press ENTER. If the prompt is **CHAPBidi [on]**, type `off`, then press ENTER.

4.7.6.7
Delete a CHAP Entry (Command Line Option -delchap)

Perform the following steps to delete an entry from the CHAP table:

1. Type `7` (**Delete a CHAP entry**), then press ENTER.
2. The CHAP table is displayed. Press ENTER.
3. At the prompt, type the entry number of the CHAP you want to delete, then press ENTER.
4. Press ENTER again.

4.7.7
List LUN Information (Command Line Option -l)

This option allows you to view the following information about LUNs attached to the selected target:

- HBA/Target/LUN Number
- Vendor name
- Product ID
- Product revision
- LUN size

You can view this information for a specific LUN or for all LUNs attached to the selected target.

For example:

```
iSCSI HBA Target Menu
HBA Target Menu
...
enter selection: 7
Target ID: 64    IP: 192.166.1.41  Port: 3260
   iSCSI Name: iqn.1992-08.com.netapp:sn.51403494
   Alias:drive4
   State:Session Active
...
Enter a Target ID:64
Enter a LUN Number[60.64,65,63,66,100,103,105,104,50,<ALL>]:63
   Vend     = NETAPP
   ProdID   = LUN
   ProdRv   = 0.2
   LunSize  = 4.999 GB
Press the ENTER key to continue.
```

4.8
Diagnostic Menu

From the HBA Diagnostic Menu, the following options are available:

- Ping Target (see section 4.8.1)
- Perform Loopback Test (see section 4.8.2)
- Perform Read/Write Buffer Test (see section 4.8.3)
- Display HBA Statistics (see section 4.8.4)

Before making a selection from the HBA Diagnostic Menu, specify the HBA port whose settings you want to view or change by typing the number for the **Set Working Adapter** option, then press ENTER. A list of all iSCSI HBA ports is displayed. Type the number for the HBA port whose settings you want to change, then press ENTER.

Make changes in the submenus, as described in the following sections.

After making changes, refresh the HBA to show these changes by typing 6 (**Refresh**), then press ENTER. If you do not select this option, your changes will not be visible in SANsurfer iSCSI HBA CLI.

4.8.1 Ping Target (Command Line Option -ping)

Perform the following steps to ping a target:

1. From the **HBA Diagnostic** menu, type `1`, then press ENTER.
2. The **Enter an IP Address:** prompt displays. Enter the target IP address, then press ENTER.
3. The **Enter the number of PING attempts to make:** prompt displays. Enter a number between 1 and2147483648 (2^31), then press ENTER.

The following text is an example of a successful ping attempt:

```
Ping to 10.14.64.153 successful <1 of 2>
Ping to 10.14.64.153 successful <2 of 2>
Press the Enter key to continue.
```

4.8.2 Perform Loopback Test (Command Line Option -lb)

CAUTION! Before performing a loopback test, make sure that the HBA does not have any outstanding I/O operations.

Perform the following steps to start a loopback test:

1. From the HBA Diagnostic menu, type `2`, then press ENTER.
2. At the prompt, enter the number of loopback tests to perform. Valid values are in the range 1–2147483648 (2^31). By default, one loopback test is run.
3. Enter the loopback test type:
   - 1 (internal)
   - 2 (external)

   By default, an internal loopback test is performed.
4. If you want to stop the loopback test if an error occurs, type y for the **Stop on error[Y]?** option.

After the test is performed, the number of failed tests and successful tests are displayed.

4.8.3
Perform Read/Write Buffer Test (Command Line Option -rwt)

CAUTION! Before performing a read/write buffer test, make sure that the HBA does not have any outstanding I/O operations.

Perform the following steps to start a read/write buffer test:

1. From the HBA Diagnostic menu, type `3`, then press ENTER.
2. At the prompt, enter the number of read/write tests to run. Valid values are in the range 1–2147483648 (2^31). By default, one test is performed.
3. A list of data patterns is displayed. Enter the number corresponding to the data pattern you want to use, then press ENTER.
4. If you want to stop the loopback test if an error occurs, type y for the **Stop on error[Y]?** option.

After the test is performed, the number of failed tests and successful tests are displayed.

4.8.4
Display HBA Statistics (Command Line Option -stat)

When this option is selected, the following information is displayed for the current HBA:

- **MACTxFramesCount.** MAC transmitted frame count
- **MACTxBytesCount.** MAC transmitted byte count
- **MACTxMulticast.** MAC transmitted multicast
- **MACTxBroadcast.** MAC transmitted broadcast
- **MACTxPauseFrames.** MAC transmitted pause frames
- **MACTxControlFrames.** MAC transmitted control frames
- **MACTxDeferrals.** MAC transmitted deferrals
- **MACTxExcessDeferrals.** MAC transmitted excess deferrals
- **MACTxLateCollisions.** MAC transmitted late collisions
- **MACTxAborts.** MAC transmitted aborts
- **MACTxSingleCollisions.** MAC transmitted single collisions
- **MACTxMultipleCollisions.** MAC transmitted multiple collisions
- **MACTxCollisions.** MAC transmitted collisions
- **MACTxFramesDropped.** MAC transmitted dropped frames
- **MACTxJumboFrames.** MAC transmitted jumbo frames
- **MACRxFramesCount.** MAC received frame count
- **MACRxBytesCount.** MAC received byte count
- **MACRxUnknownControlFrames.** MAC received unknown control frames
- **MACRxPauseFrames.** MAC received pause frames

- **MACRxControlFrames.** MAC received control frames
- **MACRxDribble.** MAC received dribble
- **MACRxFrameLengthError.** MAC received frame length errors
- **MACRxJabber.** MAC received jabber
- **MACRxCarrierSenseError.** MAC received carrier sense errors
- **MACRxFramesDropped.** MAC received dropped frames
- **MACCRCErrorCount.** MAC CRC error count
- **MACEncodingErrorCount.** MAC encoding error count
- **MACRxLengthErrorCountLarge.** MAC received large length error count
- **MACRxLengthErrorCountSmall.** MAC received small length error count
- **MACRxMulticast.** MAC received multicast
- **MACRxBroadcast.** MAC received broadcast
- **IPTxPacketsCount.** IP transmitted packet count
- **IPTxBytesCount.** IP transmitted byte count
- **IPTxFragmentsCount.** IP transmitted fragment count
- **IPRxPacketsCount.** IP received packet count
- **IPRxBytesCount.** IP received byte count
- **IPRxFragmentsCount.** IP received fragment count
- **IPDatagramReassemblyCount.** IP datagram reassembly count
- **IPv6RxPacketsCount.** IP v6 received packets count
- **IPRxPacketErrorCount.** IP received packet error count
- **IPRxFragmentOverlapCount.** IP received fragment overlap count
- **IPRxFragmentOutOfOrderCount.** IP received fragment out-of-order count
- **IPFragment ReassemblyTimeout.** IP fragment reassembly timeout
- **TCPTxSegmentsCount.** TCP transmitted segment count
- **TCPTxBytesCount.** TCP transmitted byte count
- **TCPRxSegmentsCount.** TCP received segment count
- **TCPRxBytesCount.** TCP received byte count
- **TCPPersistTimerExpiredCount.** TCP persistent timer expired count
- **TCPRetransTimerExpiredCount.** TCP re-transmit timer expired count
- **TCPRxDuplicateACKCount.** TCP received duplicate ACK count
- **TCPTxPureACKCount.** TCP transmitted pure ACK count
- **TCPRxSegmentErrorCount.** TCP received segment error count
- **TCPRxSegmentOutOfOrderCount.** TCP received segment out-of-order count
- **TCPRxWindowProbeCount.** TCP received window probe count
- **TCPRxWindowUpdateCount.** TCP received window update count
- **ECCErrorCorrectionCount.** ECC error correction count
- **iSCSITxPDUCount.** iSCSI PDU transmitted count
- **iSCSITxBytesCount.** iSCSI data bytes transmitted count
- **iSCSIRxPDUCount.** iSCSI PDU received count
- **iSCSIRxBytesCount.** iSCSI data bytes received count
- **iSCSICompletelOsCount.** iSCSI I/Os completed count
- **iSCSIUnexpectedIORxCount.** iSCSI unexpected I/O received count
- **iSCSIFormatErrorCount.** iSCSI format error count
- **iSCSIHeaderDigestCount.** iSCSI header digest error count

- **iSCSIDataDigestErrorCount.** iSCSI data digest error count
- **SCSISeqErrorCount.** iSCSI sequence error count

4.9 Display Vital Product Data (VPD) Information (Command Line Option -vpd)

When this option is selected, the following information is displayed for the current working adapter (see section 4.10):

- Product description
- Part number
- EC (European community) level
- Manufacture ID
- FRU (field replaceable unit) number
- CCIN (customer card identification number)

4.10 Set Working Adapter

When this option is selected, a list of iSCSI HBA ports is displayed. Type the number for the HBA port whose parameters you want to view or change, then press ENTER. For example:

```
1. HBA Model: QLA4052C  Serial Number: FS10406A02766  HBA Port: 0
iSCSI Name: iqn.200-04.com.qlgoic.:qla4052c.fs10406A02766.1
Alias:
IP Address: 10.14.63.183  Instance #: 0

2. HBA Model: QLA4052C  Serial Number: FS10406A02766  HBA Port: 1
iSCSI Name: iqn.200-04.com.qlgoic.:qla4052c.fs10406A02766.1
Alias:
IP Address: 10.14.63.184  Instance #: 1
```

Section 5
Non-interactive Mode Commands

5.1 Introduction

When operating in non-interactive mode, the command format is as follows:

`iscli <Command Option> [Command Variable] | [Command Variable]`

Where:

`<>` = Parameters in angled brackets are required.

`[]` = Parameters in square brackets are optional.

`|` = OR operator

Italic text = Placeholder describing the command variable (see table 5-1).

Table 5-1 defines the command variables. Command-specific variables are described in the command section to which they apply.

Table 5-1. Command Variables

Variable	Definition
HBA No.	HBA instance from number from the general HBA information (command `-i`)
Target ID	Target ID
LUN ID	Logical unit number (0–255)
CHAP Number	Challange handshake authentication protocol (CHAP) number
CHAP Name	Null-terminated CHAP name, which is sent by the HBA when responding to the CHAP challenge
CHAP Secret	CHAP secret, which is used by the HBA when generating the CHAP response
Boot Target	The target ID of the device from which to boot
Boot LUN	The LUN of the boot device

NOTE:

- The commands are case sensitive. For example, `-g` is not the same as `-G`.
- Only one command line option per input file is valid.

The positional parameters vary, depending on the command option specified. For example, to display an HBA's configured settings, use the command option `-C`, followed by the HBA number (positional parameter). In contrast, the command for providing general information, `-g`, has no positional parameters.

In non-interactive mode, most changes made to the HBA become effective immediately. This sometimes will cause the HBA to reset, as specified in the command description. Be sure the system is prepared for a HBA reset before making changes.

5.2 -b (Reset HBA)

Type the following command to reset the HBA:

`-b <HBA No.>`

The HBA will be reset after this command is issued.

5.3 -c (Display Configured HBA Settings)

Type the following command to display the configured settings for the HBA:

`-c [HBA No.]`

When the `HBA No.` parameter is used, only information for that HBA port is displayed. When the `HBA No.` parameter is not used, information for all HBA ports in the system is displayed.

For a list of HBA settings, see table 4-1.

5.4 -f (Update Firmware Image)

Type the following command to update the firmware image:

`-f <HBA No.> <File Name>`

The `File Name` parameter is the file containing the firmware image to upload to the HBA.

The HBA will be reset after this command is issued.

5.5 -g (Display General System Information)

Type the following command to display general system information:

```
-g
```

The following information is displayed:

- Host name
- Host version
- Host type

5.6 -h (Display Help File)

Type the following command to display the SANsurfer iSCSi HBA CLI help file:

```
-h
```

5.7 -i (List All QLogic iSCSI HBAs Detected)

Type the following command to display general HBA information:

```
-i [HBA No.]
```

When the HBA No. parameter is used, only information for that HBA port is displayed. When the HBA No. parameter is not used, information for all HBA ports in the system is displayed.

5.8 -l (List LUN Information)

Type the following command to list the LUN information for the specified target:

```
-l <HBA No.> <Target ID [LUN ID]>
```

When the LUN ID parameter is not used, all the LUNs on the specified target are displayed.

5.9

-n (Configure iSCSI Settings)

Type the following command to set to HBA iSCSI parameters:

```
-n <HBA No.> <Config Name|Config Alias> <Value>
[<Config Name|Config Alias> <Value> ...]
```

The HBA will be reset after this command is issued.

The `<Config Name|Config Alias> <Value>` parameter set can be repeated. These parameters are defined in table 5-2.

Table 5-2. HBA Parameters

Configuration Name	Configuration Alias	Value
Add Firmware Options		
AFW_Device_Timeouts	AFWDT	on or off
AFW_AutoConnect	AFWAC	on or off
ExeThrottle	ET	0–32768
FirstBurstLen	FB	0–32768
IPOptions		
IP_ARP_Redirect	IPARP	on or off
IP_Address	IPAD	IP address format
IP_Subnet_Mask	IPSM	IP address format
IP_Gateway	IPGW	IP address format
Primary_DNS	PDNS	IP address format
SLP_Address	SLPA	IP address format
iSCSIOptions		
iSCSI_Header_Digests	IHD	on or off
iSCSI_Data_Digests	IDD	on or off
iSCSI_Immediate_Data	IID	on or off
iSCSI_Initial_R2T	IIR2T	on or off
iSCSI_Snack	ISNACK	on or off
iSCSI_Discovery_Logout	ID	on or off
iSCSI_Strict_iSCSI_Login	IS	on or off
TCPOptions		
TCP_SLP_Use_DA	SLPDA	on or off
TCP_Auto_Discovery	SLPADIS	on or off
TCP_SLP_UA	SLPUA	on or off
TCP_SLP_SA	SLPSA	on or off

Table 5-2. HBA Parameters (Continued)

Configuration Name	Configuration Alias	Value
TCP_DHCP	TCPDHCP	on or off
TCP_DNS_Via_DHCP	DNS_DHCP	on or off
TCP_SLP_DA_Via_DHCP	DADHCP	on or off
TCP_Nagle	TCPN	on or off
Miscellaneous Options		
KeepAliveTO	KATO	0–65535
MaxBurstLen	MBL	0–65535
MaxOutstandingR2T	MOR2T	0–65535

5.10 -pa (Add a Target)

Type the following command to add persistent targets:

`-pa <HBA No.> <IP Address> [-PORT port number] [-INAME iSCSI Name]`

When the optional parameter `[-PORT port number]` is not specified, the default number 3260 is used. When the optional parameter `[-INAME iSCSI Name]` is not used, the default is an empty string.

5.11 -ps (Display Persistent (Bound Targets))

Type the following command to display persistently bound targets for the HBA port:

`-ps <HBA No.> [Target ID]`

When the optional parameter `[Target ID]` is not specified, all targets for the specified HBA port number are displayed. When neither the `[HBA No.]` nor `[Target ID]` parameters are specified, then all target IDs for all HBA ports in the system are displayed.

5.12 -pb (Bind Target)

Type the following command to persistently bind a target:

`-pb <HBA No.> <Target ID>`

5.13
-pu
(Unbind Target)

Type the following command to unbind a persistently bound target:

`-pu <HBA No.> <Target ID>`

5.14
-px
(Unbind all Targets)

Type the following command to unbind all persistently bound targets on the HBA:

`-px <HBA No.>`

5.15
-r
(Update ROM Image)

Type the following command to update the specified HBA's ROM:

`-r <HBA No.> <File Name>`

The `<HBA No.>` parameter indicates the HBA instance to update. The `<File Name>` parameter is the file containing the ROM image to upload to the HBA.

5.16
-t
(List Targets)

Type the following command to display target information:

`-t <HBA No.> [Target ID]`

When only the `<HBA No.>` parameter is specified, target information for all targets on the specified HBA port is displayed. When the optional parameter `[Target ID]` is specified, only information on the specified target is displayed.

5.17
-ping
(Ping IP Address)

Type the following command to ping the specified IP address:

`-ping <HBA No.> <IP Address> <Ping Count>`

Where:

HBA No. = The HBA port where the ping operation will be performed.

IP Address = The IP address to ping.

Ping Count = The number of times you want to ping the IP address (1–2147483648 (2^31)).

5.18 -lb (Perform Loopback Test)

CAUTION! Before performing a loopback test, make sure that the HBA does not have any outstanding I/O operations.

Type the following command to run a loopback test:

```
-lb [-STOP] [-EXTLB] <HBA No.> [-CNT <Test Count>]
```

Where:

–STOP = The loopback test is stopped if a failure occurs.

–EXTLB = An external loopback test is performed. By default, an internal loopback test is performed.

HBA No. = The HBA port where the loopback test is to be performed.

-CNT = This parameters is used with *Test Count* to indicate how many loopback tests to perform. When this parameter is not used, one test is performed.

Test Count = The number of loopback tests to perform. By default, one test is performed. To perform more than one test, enter a number between 2–2147483648 (2^31).

5.19 -rwt (Perform Read/Write Buffer Test)

CAUTION! Before performing a read/write buffer test, make sure that the HBA does not have any outstanding I/O operations.

Type the following command to perform a read/write buffer test:

```
-rwt [-STOP] [-RWPAT n] <HBA No.> [-CNT <Test Count>]
```

Where:

–STOP = The read/write buffer test is stopped if a failure occurs.

–RWPAT *n* = Sets the pattern to write to the buffer. *n* can be one of the following:
1 (8 bytes of 55h)
2 (8 bytes of 5Ah)
3 (16 bytes of AAh)
4 (16 bytes of FFh)
The default pattern is 1h (8 bytes)

HBA No. = The HBA port where the read/write buffer test is to be performed.

-CNT = This parameters is used with *Test Count* to indicate how many read/write buffer tests to perform. When this parameter is not used, one test is performed.

Test Count = The number of read/write buffer tests to perform. By default, one test is performed. To perform more than one test, enter a number between 2–2147483648 (2^31).

This command runs a read/write buffer test that writes an 8- or 16-byte pattern to the disk's buffer and reads the written buffer back. The test is nondestructive to disk data.

5.20
-dspchap (Display a CHAP Table)

Type the following command to display the CHAP table:

```
-dspchap <HBA No.>
```

5.21
-chapmap (Display Targets Using CHAP Entries)

Type the following command to display a mapping of the targets to the CHAP table entries:

```
-chapmap <HBA No.>
```

5.22
-linkchap (Assign a CHAP Entry to a Target)

Type the following command to link a CHAP entry to a target:

`-linkchap <HBA No.> <CHAP No.> <Target ID>`

The HBA will not be reset after this command is issued.

5.23
-addchap (Add a CHAP Entry)

Type the following command to add a CHAP entry to the persistent CHAP table:

`-addchap <HBA No.> <CHAP Name> <CHAP Secret> [-BIDI]`

The optional parameter `[-BIDI]` indicates that the CHAP entry is BIDI (bidirectional). When this parameter is not specified (default), the CHAP entry is local.

The HBA will be reset after this command is issued.

5.24
-defbidi (Add a Default BIDI CHAP)

Type the following command to add a BIDI CHAP entry to the specified HBA port:

`-defbidi <HBA No.> <CHAP Secret>`

The HBA will be reset after this command is issued.

5.25
-edchap (Edit a CHAP Entry)

Type the following command to change the value of the specified CHAP entry:

`-edchap <HBA No.> <CHAP> <Parameter>|<Parameter Alias> <Value> [<Parameter>|<Parameter Alias> <Value> ...]`

The `<Parameter>|<Parameter Alias> <Value>` parameter pair can be repeated to change multiple values; see table 5-3.

Table 5-3. CHAP Parameters

Parameter	Parameter Alias	Value
CHAPName	CNAME	character string
CHAPSecret	CSECRET	character string
CHAPBidi	CBIDI	on or off

The HBA will be reset after this command is issued.

5.26
-delchap (Delete a CHAP Entry)

Type the following command to delete a CHAP entry:

`-delchap <HBA No.> <CHAP>`

The HBA will be reset after this command is issued.

5.27
-pinfo (HBA Port Information)

Type the following command to display the port information for the specified HBA:

`-pinfo <HBA No.>`

5.28
-isns (iSNS Settings)

Type the following command to configure the iSNS settings:

`-isns <HBA No.> [iSNS IP Address]`

When the `[iSNS IP Address]` parameter is not specified, the iSNS client on the specified HBA port is disabled.

The HBA will be reset after this command is issued.

5.29
-gcr (Get Crash Record)

Type the following command to obtain crash record information for the specified HBA port:

`-gcr <HBA No.> <Crash Output File>`

5.30
-rdf (Restore Default Firmware Settings)

Type the following command to restore the specified HBA port's firmware values to the factory defaults:

`-rdf <HBA No.>`

The HBA will be reset after this command is issued.

5.31 -rdh (Restore HBA Settings)

NOTE: This option is not supported in the QLA4010 HBA.

Type the following command to restore the specified HBA port's settings to their factory defaults:

```
-rdh <HBA No.> [A] [F N I T C V S]
```

Where:

- `HBA No.` = HBA port whose factory settings you want to restore.
- `A` = Restores the factory settings for the entire HBA (firmware parameters, network parameters, iSCSI name, targets, CHAP table, NVARAM, and IPSec). The HBA will be reset after this command is issued.
- `F` = Restores the firmware parameters to the factory default values. The HBA will be reset after this command is issued.
- `N` = Restores the network parameters to the factory default values. The HBA will be reset after this command is issued.
- `I` = Restores the iSCSI name to the factory default value. The HBA will be reset after this command is issued.
- `T` = Restores the targets to the factory default values.
- `C` = Restores the CHAP table to the factory default values.
- `V` = Restores the NVRAM to the factory default values.
- `S` = Restores the IPSec to the factory default values (QLA4050/4052 and QMC4052 HBAs).

If you want to restore all areas of the HBA port, use the `A` parameter, or do not specify a parameter. Otherwise, specify which areas to restore. For example, the following command restores the firmware and NVRAM to the factory defaults:

```
-rdh <HBA No.> F N
```

5.32 -stat (Display HBA Statistics)

Type the following command to display the statistics for the specified HBA:

```
-stat <HBA No.>
```

See section 4.8.4 for a list of statistics that are displayed.

5.33 -netconf (Display Network Settings)

Type the following command to configure the network settings:

```
-netconf <HBA No.> [IP <IP Address>] [IPNM <Subnet Mask>] [-IPGW
<Gateway Address>] [-IPDNS <DNS Address>]
```

Where:

`IP <IP Address>` = Sets the IP address of the HBA.

`IPNM <Subnet Mask>` = Sets the subnet mask of the HBA.

`-IPGW <Gateway Address>` = Sets the gateway.

`-IPDNS <DNS Address>` = Sets the DNS address.

Setting the IP address, subnet mask, or gateway turns off DHCP address resolution for the IP, DNS, and SLP configurations if it is on. Setting the DNS address turns off only DHCP address resolution for the DNS service if it is on.

5.34 -ipdhcp (Configure IP Settings)

Type the following command to turn on DHCP address resolution to discover the IP address, subnet mask, and gateway:

```
-ipdhcp <HBA No.>
```

If the HBA port had prior values set manually, the DHCP values override them.

5.35
-dnsdhcp (Configure IP Settings)

Type the following command to turn on DHCP address resolution to discover the DNS server address:

```
-dnsdhcp <HBA No.>
```

This command is valid only if DCHP is on for the IP configuration.

5.36
-slp (Display Network Settings)

Type the following command to configure SLP for the HBA port:

```
-slp <HBA No.> [-OFF] [-DHCP] [-SLPAD <SLP Address>]
```

Where:

`-OFF`	= Turns off the SLP function
`-DHCP`	= Turns on the SLP function and uses DHCP to determine the SLP server address
`-SLPAD <SLP Address>`	= Turns on SLP and uses the specified SLP address

When none of the optional parameters are specified, SLP defaults to auto-discovery of SLP targets.

DHCP address resolution (`–DHCP`) cannot be set if DHCP is on for the IP configuration.

5.37
-binfo (Display Bootcode Information)

Type the following command to display the bootcode settings for the specified HBA port:

```
-binfo <HBA No.>
```

5.38
-bootcodemode (Set Bootcode Mode (QLA4050/4052 and QMC4052 HBAs))

Type the following command to set the bootmode mode:

```
-bootcodemode <HBA No.> <1>|<2>|<3>
```

Where:

`1` = Disables bootcode mode

`2` = Manual mode

`3` = DHCP mode

DCHP mode (`3`) is valid only when DHCP is enabled.

5.39
-bootcode (Update Bootcode Code Image)

Type the following command to update the bootcode code image:

```
-bootcode <HBA No.> <Bootcode Code Image File Name>
```

5.40
-sbootcodecid (Set Alternative Client ID)

Type the following command to set the alternative client ID:

```
-sbootcodecid <HBA No.> <Alternative Client ID>
```

5.41
-pbootcode (Set Primary Boot Target Information)

Type the following command to set the primary bootcode boot target and LUN:

```
-pbootcode <HBA No.> <Boot Target> <Boot LUN>
```

5.42
-sbootcode (Set Secondary Boot Target Information)

Type the following command to set the secondary boot target and LUN:

```
-sbootcode <HBA No.> <Boot Target> <Boot LUN>
```

5.43
-cpbootcode (Clear Primary Target Information)

Type the following command to clear the primary boot target and LUN:

```
-cpbootcode <HBA No.>
```

5.44
-csbootcode (Clear Secondary Primary Target Information)

Type the following command to clear the secondary boot target and LUN:

```
-csbootcode <HBA No.>
```

5.45
-ver (Display Program Version Information)

Type the following command to display the iSCSI HBA CLI program version information:

```
-ver
```

5.46
-vpd (Display VPD Information)

Type the following command to display VPD information:

```
-vpd <HBA No.>
```

Index

A

Accept AEN 4-6
Access control, firmware 4-6
ACK, AFW_Delayed_Ack firmware parameter 4-7, 4-16, 4-18
-addchap 5-9
Address
  IP 4-13, 4-16, 4-17, 5-4
  secondary IP 4-13
  SLP 4-14, 4-17, 5-4
Advanced settings, configuring 4-18
AEN, accepting 4-6
AFW
  AutoConnect firmware parameter 4-7
  Delayed _Ack firmware parameter 4-7
  Device_Timeouts firmware parameter 4-7
  see also Firmware parameters
Alarm, protocol statistics 4-6
Alias 4-2
  HBA, changing 4-14
  iSCSI 4-13, 4-16, 4-17
Alternate client ID, bootcode 4-20
Alternative client ID, setting 4-21, 5-14
Autoconnect 4-7, 4-16, 4-18, 5-4

B

-b 5-2
Basic settings, configuring 4-17
Binding targets 4-25, 5-5
-binfo 5-13
Board type 4-22
Boot
  target information, clearing primary 4-21, 5-14
  target information, clearing secondary 4-21, 5-15
  target information, setting primary 4-21, 5-14
  target information, setting secondary 4-21, 5-14
Bootcode
  alternate client ID 4-20
  code image, updating 4-21, 5-14
  DHCP mode 4-20
  display information about 4-20, 5-13
  manual mode 4-20
  mode 4-20
  mode, setting 4-20, 5-13
  primary target ID 4-20
  secondary target ID 4-20
  vendor ID 4-20
  version 4-20, 4-22
-bootcode 5-14
-bootcodemode 5-13
Buffer, sense buffer description 4-7

C

-c 5-2
Change HBA alias 4-14
CHAP
  default bidirectional (BIDI), adding 4-28, 5-9
  entry, adding 4-28, 5-9
  entry, assigning to a target 4-27, 5-9
  entry, deleting 4-29, 5-10
  entry, displaying targets using 4-27, 5-8
  entry, editing 4-29, 5-9
  iSCSI bidirectional CHAP authentication 4-9
  iSCSI CHAP authentication 4-9
  table, displaying 4-27, 5-8
-chapmap 5-8
Chip version 4-22
CLI commands, *see* Commands
Command
  format 5-1
  line mode 2-1, 2-3
  variables 5-1
Commands
  -addchap 5-9
  -b 5-2

-binfo 5-13
-bootcode 5-14
-bootcodemode 5-13
-c 5-2
-chapmap 5-8
-cpbootcode 5-14
-csbootcode 5-15
-defbidi 5-9
-delchap 5-10
-dnsdhcp 5-13
-dspchap 5-8
-edchap 5-9
-f 5-2
-g 5-3
-gcr 5-10
-h 5-3
-i 5-3
-isns 5-10
-l 5-3
-lb 5-7
-linkchap 5-9
-n 5-4
-netconf 5-12
-pa 5-5
-pb 5-5
-pbootcode 5-14
-pinfo 5-10
-ping 5-6
-ps 5-5
-pu 5-6
-px 5-6
-r 5-6
-rdf 5-10
-rdh 5-11
-rwt 5-7
-sbootcode 5-14
-sbootcodecid 5-14
-slp 5-13
-stat 5-12
-t 5-6
-ver 5-15
-vpd 5-15
Connection type 4-22
Control, firmware access 4-6
-cpbootcode 5-14
Crash record, getting 4-19, 5-10
-csbootcode 5-15

D

Data
  digests, iSCSI 4-9, 4-15, 4-18, 5-4
  digests, target iSCSI I/O 4-25
  maximum receive data segment length 4-11
  PDU in order, iSCSI 4-9
  sequence in order 4-9
Default
  HBA settings, restoring 4-18, 5-10
  restoring HBA factory 4-22, 5-11
  time to retain 4-11
  time to wait 4-11
-defbidi 5-9
-delchap 5-10
Device
  AFW_Device_Timeout firmware parameter 4-7, 4-16, 4-18, 5-4
  settings, configuring 4-16
  type 4-8
DHCP 4-3, 4-4
  bootcode mode 4-20
  TCP_DCHP firmware parameter 4-12, 4-16, 4-17, 5-5
  TCP_DNS_Via_DHCP firmware parameter 4-12, 4-16, 4-17, 5-5
  TCP_SLP_DA_Via_DHCP firmware parameter 4-12, 4-16, 4-17, 5-5
Diagnostic menu 4-30
Discovery logout, iSCSI 4-10, 4-15, 4-16, 4-17, 5-4
Discovery logout, target iSCSI I/O 4-25
DNS, primary 4-13, 4-17, 5-4
DNS, secondary 4-13
-dnsdhcp 5-13
Driver ID number 4-2
Driver version 4-22
-dspchap 5-8

E

-edchap 5-9
Error recovery level, iSCSI 4-10
Error recovery level, target iSCSI I/O 4-25
Execution throttle 4-8, 4-18, 4-25, 5-4

F

-f 5-2
Fast posting 4-6
Firmware
  image, updating 4-19, 5-2
  settings 4-5, 4-16
  version 4-22
Firmware parameters
  AFW_AutoConnect 4-7, 4-16, 4-18, 5-4
  AFW_Delayed_Ack 4-7, 4-16, 4-18
  AFW_Device_Timeouts 4-7, 4-16, 4-18, 5-4
  DefaultTime2Retain 4-11
  DefaultTime2Wait 4-11
  DevType 4-8
  ExeThrottle 4-8, 4-18, 5-4
  FirstBurstLen 4-8, 4-18, 5-4
  FW_Accept_AEN 4-6
  FW_Access_Control 4-6
  FW_Fast_Posting 4-6
  FW_Initiator_Mode 4-6
  FW_Marker 4-6
  FW_Sense_Buffer_Desc 4-7
  FW_Session Mode 4-6
  FW_Stat_Alarm 4-6
  FW_Target_Mode 4-6
  FW_ZIO_Enable_Mode 4-7, 4-16, 4-18
  IP_Address 4-13, 4-16, 4-17, 5-4
  IP_ARP_Redirect 4-8, 4-18, 5-4
  IP_Fragmentation 4-8
  IP_Gateway 4-13, 4-17, 5-4
  IP_Subnet Mask 4-13, 4-17, 5-4
  iSCSI_Alias 4-13, 4-16, 4-17
  iSCSI_Bidi_CHAP_Auth 4-9
  iSCSI_CHAP_Auth 4-9
  iSCSI_Data_Digests 4-9, 4-15, 4-18, 5-4
  iSCSI_Data_PDU_In_Order 4-9
  iSCSI_Data_Seq_In_Order 4-9
  iSCSI_Discovery_Logout 4-10, 4-15, 4-16, 4-17, 5-4
  iSCSI_Error_Recovery_Level 4-10
  iSCSI_Header_Digests 4-9, 4-15, 4-18, 5-4
  iSCSI_Immediate Data 4-9, 4-15, 4-18, 5-4
  iSCSI_Initial_R2T 4-9, 4-15, 4-18, 5-4
  iSCSI_Name 4-13
  iSCSI_Receive_Markers 4-8
  iSCSI_Send_Markers 4-8
  iSCSI_Snack 4-10, 4-15, 4-16, 4-17, 5-4
  iSCSI_Strict_Login 4-10, 4-16, 4-17, 5-4
  KeepAliveTO 4-10, 4-18, 5-5
  Large_Frames 4-8
  MaxBurstLen 4-11, 4-18, 5-5
  MaxOutstandingR2T 4-11, 4-18, 5-5
  MaxRxDataSegmentLen 4-11
  Port 4-11
  Primary_DNS 4-13, 4-17, 5-4
  Secondary_DNS 4-13
  Secondary_IP_Address 4-13
  SLP_Address 4-14, 4-17, 5-4
  TCP_Auto_Discovery 4-11, 4-16, 4-17, 5-4
  TCP_DHCP 4-12, 4-16, 4-17, 5-5
  TCP_DNS_Via_DHCP 4-12, 4-16, 4-17, 5-5
  TCP_Nagle 4-12, 4-16, 4-17, 5-5
  TCP_SLP_DA_Via_DHCP 4-12, 4-16, 4-17, 5-5
  TCP_SLP_SA 4-12, 4-16, 4-17, 5-4
  TCP_SLP_UA 4-11, 4-16, 4-17, 5-4
  TCP_SLP_Use_DA 4-11, 4-16, 4-17, 5-4
  TCP_Time_Stamp 4-13, 4-18
  TCP_Timer_Scale 4-12
  VLAN_Enable 4-8, 4-18
  VLAN_ID 4-8, 4-18
  VLAN_User_Priority 4-8, 4-18
  ZIO 4-14, 4-18
First burst length 4-8, 4-18, 4-25, 5-4
FW, *see* Firmware parameters

G

-g 5-3
Gateway, IP 4-13, 4-17, 5-4
-gcr 5-10

H

-h 5-3
HBA
  alias 4-2
  board type 4-22
  bootcode version 4-22
  chip version 4-22
  connection type 4-22
  default settings, restoring 4-18, 5-10
  driver version 4-22
  factory defaults, restoring 4-22, 5-11
  firmware parameters 4-6, 5-2
  Firmware Settings Menu 4-5
  firmware version 4-22
  Information Menu 4-22
  information, displaying 5-10
  iSCSI version 4-22
  list all QLogic HBAs 4-1, 5-3
  MAC address 4-22
  model 4-1
  Options Menu 4-2
  port iSCSI name 4-2
  port number 4-1
  portal duplex 4-22
  portal flow control 4-22
  portal link speed 4-22
  reset 4-23, 5-2
  ROM version 4-22
  serial number 4-1, 4-22
  statistics, displaying 4-32, 5-12
HBA Menus
  Bootcode Settings 4-19
  Edit Configured HBA Settings 4-14
  Network Settings 4-3
Header digests, iSCSI 4-9, 4-15, 4-18, 5-4
Header digests, target iSCSI I/O 4-25
Help file, displaying 5-3
Host name, version, type 4-1

I

-i 5-3
ID, setting alternative client ID 4-21, 5-14
Image, updating firmware 4-19, 5-2
Image, updating ROM 4-19, 5-6
Immediate data, iSCSI 4-9, 4-15, 4-18, 5-4
Immediate data, target iSCSI I/O 4-25
Initial R2T, iSCSI 4-9, 4-15, 4-18, 5-4
Initial R2T, target iSCSI I/O 4-25
Initiator mode 4-6
Installation
  download install package 3-1
  Red Hat/SuSE Linux/PPC 3-6
  Solaris SPARC/Solaris x86 3-6
  Windows 3-2
Interactive mode 2-1
IP
  address 4-2, 4-13, 4-16, 4-17, 4-26, 5-4
  ARP redirect 4-8, 4-18, 5-4
  fragmentation 4-8
  gateway 4-13, 4-17, 5-4
  secondary IP address 4-13
  settings 4-4, 5-13
  subnet mask 4-13, 4-17, 5-4
iSCSI 4-25
  alias 4-13, 4-16, 4-17
  bidirectional CHAP authentication 4-9
  CHAP authentication 4-9
  data digests 4-9, 4-15, 4-18, 5-4
  Data PDU in order 4-9
  data sequence in order 4-9
  discovery logout 4-10, 4-15, 4-16, 4-17, 5-4
  error recovery level 4-10
  header digests 4-9, 4-15, 4-18, 5-4
  immediate data 4-9, 4-15, 4-18, 5-4
  initial R2T 4-9, 4-15, 4-18, 5-4
  name 4-2, 4-13
  receive markers 4-8
  send markers 4-8
  settings, configuring 4-15, 5-4
  snack 4-10, 4-15, 4-16, 4-17, 5-4
  strict login 4-10, 4-16, 4-17, 5-4
  version 4-22
iSDMAPI 4-1
iSNS 4-3, 4-5, 5-10
-isns 5-10

K

Keep alive timeout 4-10, 4-18, 4-25, 5-5

L

-l 5-3
Large frames 4-8
-lb 5-7
-linkchap 5-9
Login, iSCSI strict login 4-10, 4-16, 4-17, 5-4
Loopback test, performing 4-31, 5-7
LUN
  information, listing 4-30, 5-3
  number 4-30
  product ID 4-30
  product revision 4-30
  size 4-30
  vendor name 4-30

M

MAC address 4-22
Marker IOCB 4-6
Maximum
  burst length 4-11, 4-18, 4-25, 5-5
  outstanding R2T 4-11, 4-18, 4-25, 5-5
  receive data segment length 4-11
Menus
  Configure Target Authentication 4-26
  Diagnostic 4-30
  Display General System Information 4-1
  Display Program Version Information 4-1
  Display VDP Information 4-34
  HBA Information 4-22
  List All QLogic iSCSI HBAs detected 4-1
  Options 4-2
  Set Working Adapter 4-34
  Target 4-24
Modes
  bootcode 4-20, 5-13
  initiator 4-6
  interactive 2-1
  non-interactive (command line) 2-1, 2-3
  session 4-6
  target 4-6
  ZIO 4-7, 4-16, 4-18

N

-n 5-4
Nagle, CPO (target) 4-25
Nagle, TCP 4-12, 4-16, 4-17, 5-5
Name, iSCSI 4-13
-netconf 5-12
Network settings 4-3, 5-12, 5-13
Network, HBA Network Settings Menu 4-3
Non-interactive mode 2-1, 2-3

O

Operating systems supported by SANsurfer iSCSI HBA CLI 1-1

P

-pa 5-5
-pb 5-5
-pbootcode 5-14
Persistent bound targets, displaying 5-5
-pinfo 5-10
-ping 5-6
Ping target 4-31, 5-6
Port number 4-11
Port target 4-25
Portal
  duplex 4-22
  flow control 4-22
  link speed 4-22
PPC
  installing SANsurfer iSCSI HBA CLI 3-6
  uninstalling SANsurfer iSCSI HBA CLI 3-7
Primary
  boot target information, clearing 4-21, 5-14
  boot target information, setting 4-21, 5-14
  DNS 4-13, 4-17, 5-4
  target ID, bootcode 4-20
Product ID, LUN 4-30
Product revision, LUN 4-30
Program version 4-1, 5-15
Protocol statistics alarm 4-6
-ps 5-5
-pu 5-6
-px 5-6

R

-r 5-6
R2T, maximum outstanding 4-11, 4-18, 5-5
-rdf 5-10
-rdh 5-11
Read/write buffer test, performing 4-32, 5-7
Receive markers, iSCSI 4-8
Red Hat
  installing SANsurfer iSCSI HBA CLI 3-6
  uninstalling SANsurfer iSCSI HBA CLI 3-7
Reset HBA 4-23, 5-2
ROM image, updating 4-19, 5-6
ROM version 4-22
-rwt 5-7

S

SANsurfer iSCSI HBA CLI, operating systems supported 1-1
SANsurfer iSCSI HBA CLI, program version 4-1
-sbootcode 5-14
-sbootcodecid 5-14
Secondary
  boot target information, clearing 4-21, 5-15
  boot target information, setting 4-21, 5-14
  DNS 4-13
  IP address 4-13
  target ID, bootcode 4-20
Send markers, iSCSI 4-8
Sense buffer description 4-7
Serial number 4-22
Session mode 4-6
Set Working Adapter menu 4-34
SLP 4-3, 4-5
  address 4-14, 4-17, 5-4
  TCP_SLP_DA_Via_DHCP firmware parameter 4-12, 4-16, 4-17, 5-5
  TCP_SLP_SA firmware parameter 4-12, 4-16, 4-17, 5-4
  TCP_SLP_UA firmware parameter 4-11, 4-16, 4-17, 5-4
  TCP_SLP_Use_DA firmware parameter 4-11, 4-16, 4-17, 5-4
-slp 5-13
Snack, iSCSI 4-10, 4-15, 4-16, 4-17, 5-4
Snack, target iSCSI I/O 4-25
Solaris SPARC/Solaris x86
  installing SANsurfer iSCSI HBA CLI 3-6
  uninstalling SANsurfer iSCSI HBA CLI 3-7
-stat 5-12
Statistics, HBA 4-32, 5-12
Strict login, target iSCSI I/O 4-25
Subnet mask, IP 4-13, 4-17, 5-4
SuSE Linux
  installing SANsurfer iSCSI HBA CLI 3-6
  uninstalling SANsurfer iSCSI HBA CLI 3-7
System information 4-1, 5-3

T

-t 5-6
Target
  adding 4-26, 5-5
  binding 4-25, 5-5
  boot target information, clearing primary 4-21, 5-14
  boot target information, clearing secondary 4-21, 5-15
  boot target information, setting primary 4-21, 5-14
  boot target information, setting secondary 4-21, 5-14
  bootcode primary target ID 4-20
  bootcode secondary target ID 4-20
  bound, displaying 5-5
  CHAP entry, assigning 4-27, 5-9
  Configure Target Authentication menu 4-26
  listing 4-24, 5-6
  menu 4-24
  mode 4-6
  ping 4-31, 5-6
  unbinding 4-25, 5-6
  with CHAP entries, displaying 4-27, 5-8
Target parameters
  TGT_DefaultTimeout 4-25
  TGT_ExeThrottle 4-25
  TGT_FirstBurstLen 4-25
  TGT_iSCSI_Name 4-25
  TGT_KeepAliveTimeout 4-25
  TGT_MaxBurstLen 4-25

TGT_MaxOutstandingR2T 4-25
TGT_Port 4-25
TGT_TargetIPAddress 4-26
TGTCPO_Nagle 4-25
TGTCPO_Timestamp 4-26
TGTISCISO_Data_Digests 4-25
TGTISCSIO_Header_Digests 4-25
TGTISCSIO_Immediate_Data 4-25
TGTISCSIO_Initial_R2T 4-25
TGTISCSIO_Snack 4-25
TGTSCSIO_Discovery_Logout 4-25
TGTSCSIO_Error_Recovery_Level 4-25
TGTSCSIO_Strict_Login 4-25
TCP
auto discovery 4-11, 4-16, 4-17, 5-4
DHCP firmware parameter 4-12, 4-16, 4-17, 5-5
DNS_Via_DHCP firmware parameter 4-12, 4-16, 4-17, 5-5
Nagle 4-12, 4-16, 4-17, 5-5
SLP_DA_Via_DHCP firmware parameter 4-12, 4-16, 4-17, 5-5
SLP_SA firmware parameter 4-12, 4-16, 4-17, 5-4
SLP_UA firmware parameter 4-11, 4-16, 4-17, 5-4
SLP_Use_DA firmware parameter 4-11, 4-16, 4-17, 5-4
time stamp 4-13, 4-18
timer scale 4-12
Time, TCP time stamp 4-13, 4-18
Timeout, AFW_Device_Timeout firmware parameter 4-7, 4-16, 4-18, 5-4
Timeout, default (target) 4-25
Timer, TCP timer scale 4-12
Timestamp, CPO (target) 4-26

U

Unbinding targets 4-25, 5-6
Uninstall
Red Hat/SuSE Linux/PPC 3-7
Solaris SPARC/Solaris x86 3-7
Windows 3-7

V

-vdp 5-15
Vendor ID, bootcode 4-20
Vendor name, LUN 4-30
-ver 5-15
Version, bootcode 4-20
VLAN
enable 4-8, 4-18
ID 4-8, 4-18
user priority 4-8, 4-18
VPD, displaying 4-34, 5-15

W

Windows
installing SANsurfer iSCSI HBA CLI 3-2
uninstalling SANsurfer iSCSI HBA CLI 3-7

Z

ZIO 4-14, 4-18
ZIO mode 4-7, 4-16, 4-18